$5 per Annum. Vol. IX. No. 2. Single Nos. $1.50.

THE PEDAGOGICAL SEMINARY.

AN INTERNATIONAL RECORD OF EDUCATIONAL LITERATURE, INSTITUTIONS AND PROGRESS.

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JUNE, 1902.

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WORCESTER, MASS.

LOUIS N. WILSON, Publisher.

AGENTS:

London: K. PAUL, TRENCH, TRÜBNER & CO. *Paris:* F. ALCAN. *Berlin:* MAYER & MÜLLER

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THE

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VOL. IX. JUNE, 1902. No. 2.

EDITORIAL.

In the first article Dr. Wylie has gathered from the literature and from his own personal study and observation data which make a comprehensive introduction to the whole subject of the psychology and the education of the blind, with the important literature. The training of defectives, now so important a part of pedagogy, is in some respects more interesting and scientific, because requiring a more highly specialized knowledge than is the training of normal children.

Dr. Chamberlain's vigorous and somewhat revolutionary views on the teaching of English are at least along lines which many are now thinking. Whether these new conceptions to which this author gives such original expression will ever have sufficient strength to reform our present methods is uncertain.

Mr. Dana is one of the most progressive and liberal of all American librarians. No one has so fully realized that books are to be used first and chiefly, and that their preservation and safe guarding is always secondary and subordinate. His magnificent work in Springfield almost marked a new epoch in making the resources of libraries more accessible to those who use them.

The editor hastens to retract and modify the opinion expressed in his article on normal schools, that it would be hard to take the statistics of the number of normal teachers holding degrees. This, it appears, has been done for 111 normal

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teachers by the State Board of Education. Of this number 51 are men, 22 of whom are college graduates; and 60 are women, of whom 9 are college graduates. Of the total of 31 college graduates on the normal staffs in Massachusetts, 10 hold the degree of A. M. and 4 of Ph. D. It is perhaps on the whole more surprising that so small a per cent. of the women teachers in normal schools hold degrees. These figures are extremely significant. It would be no less so if we could learn how many of all the normal teachers in this State are graduates of normal schools, and of these how many also have completed a high school course, and how many have only a grammar school training supplemented by that of a normal school.

In the second address of the editor he has sought to suggest points of *rapprochement* between physics and manual training which, in his opinion, would be helpful to both.

Mr. Ellis has contributed another suggestive and interesting parallelism between the growth of the individual child and the race in demonstrating, on the basis of many instances, the strong propensity of the modern child to ascribe psychic states, often very complex, to inanimate things.

Mr. Bonser has applied the questionnaire method to analyze the propensity of children to form strong individual attachments to each other, and has considered especially the age of such attachments, the reasons, frequency, quarrels, likes and dispositions, duration of friendship, pupils without chums, and has drawn a few interesting and important conclusions.

The last article is a plain story of what has been accomplished by a single city grammar master in the way of making the home a center of improvement for parents and community, and widening its sphere from the mere hearing of lessons to making contact with life.

ON THE PSYCHOLOGY AND PEDAGOGY OF THE BLIND.

By Arthur R. T. Wylie, Fellow in Clark University.

History of the Blind.

The history of the blind before 1784 is one of "legends, suffering and individual gropings." Since that time we have the invention and application of means and methods of education for them.

History has very little to tell us of these unfortunates except now and then to record the name of some blind genius who aroused the astonishment of his contemporaries. The earliest ones of which we hear are the blind theologian Didymus of Alexandria and the poets Bashar who flourished in the 7th century and Aboul-Ola-Hamid-Ben-Soliman. Thus the Orient gives us the first records.

Judging by their medical treatises the blind must have been numerous during Roman times but no methods of instruction have come down to us. Diogenes Laertius relates that several philosophers deprived themselves of sight in order to meditate more easily. Diodorus was a philosopher and musician and taught geometry and was noted for his clear demonstrations. Aufidius wrote a Greek history. Didymus, the teacher of St. Jerome, lost sight at five years and became a noted theologian and mathematician as well as a professor at Alexandria. His most noted work is a "Treatise on the Holy Ghost."

The first charitable institution of which we have any record was a hospital established by St. Basile at Cesarea in Cappadocia in the 4th century. In the following century St. Limnee organized a refuge at Syr in Syria, and about 630 a typhlocominus was established at Jerusalem. St. Bernard, Bishop of Mans, established an institution for the blind in the 7th century.

But these leadings were not followed up and the blind were left to become beggars at churches and by the waysides, which seems to have been the chief way for caring for these unfortunates until very recent times.

In 1260 Louis IX founded the Hospice des Quinze-Vingts, a retreat for three hundred blind paupers, hence the name.

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However they were often subjected to inhuman treatment from the rough manners of the times. We are told that in 1425 Charles VII placed four blind men in full armor and armed with clubs in a fenced inclosure with a large hog which was to be given to the one who would kill it. In attempting to do this they were said to have given each other such blows but that for the armor they would have been killed. The court of Charles is reported to have been highly amused by this spectacle.

However, in Japan the blind were more highly esteemed, for Charlevoix in his History of Japan tells us that the history and annals of the empire were confided to the memory of the blind who communicated their knowledge to the following generation and thus formed an unbroken tradition which no one would contradict. They had their Academy where they were taught, where exercises were given to cultivate the memory and from which they received degrees. They also turned portions of the history into verse and adorned it with music. They had their special officers and received great "consideration."

Nicaise, of Malines, blind from the age of three, taught canon and civil law at the University of Cologne, quoting long passages from memory; he became a priest and preached the remainder of his life, dying in 1492. James Schegkius, who died in 1587, taught philosophy and medicine at Tübigen for thirteen years. To the oculist that offered him aid when he lost his sight he replied that "he had seen many things in life he would rather have not seen, and would even have wished on some occasions that he had been deaf." Asconius wrote a treatise on grammar. The 14th century produced the blind poet Loedini in Italy, the philosopher Ferdinandus de Bruges, Bruman the musician, and Herman Correntier famous for learning. In the next century we find Commenius the mathematician, and the poet Malaval in France, in Germany, Professor Schoenberg. In the 18th century there flourished Moyses the chemist, Stanley the musician, Blacklock the poet in England, and Kleinhaus the sculptor, and Kennedi and Koeperli the artisans in Germany. These instances simply served to show what great minds could do even under great difficulties and they would indicate that possibly lesser minds might be educated if the proper means were used to this end, but they gave no indication as to what these should be. However, Jerome Cardan an Italian physician, who flourished during the middle of the 16th century, had conceived the idea that the blind could be taught to read and write by means of touch and cited Erasmus as supporting the view.[1] And in 1575, we find Francesco

[1] There is no reference to this in the works of Erasmus.

Lucas in Spain, and Rampazzetto in Italy, had made use of large concave letters cut in wood, both singly and in groups, for instruction of the blind.

In 1646 appeared the first book which called attention to the condition of the blind. It was published in Italian and French under the title "L'Aveugle affligé et consolé." In 1670 appeared a book on the instruction of the blind by Lana Terzi, a Jesuit.

Six years after this Mlle. Elizabeth Waldkirch, of Geneva, was taught to read by Jacques Bernoulli, a Swiss savant, but the means of her instruction were not made known.

Bishop Burnet, of Salisbury, tells us in his "Journeys in Switzerland" of Mlle. Walkier, of Shaffenhausen, who had lost her sight when one year old but "spoke five languages, was a theologian, a philosopher, and a good musician. She learned to write by means of hollow characters cut in wood which she passed over with a sharp pointed iron. Afterwards she made use of a pencil and when the bishop saw her, in 1685, she wrote rapidly and correctly."

In 1690 appeared Locke's Essay on Human Understanding in which he attempted to deduce all our knowledge from experience. Consequently he was much interested in a question that his friend Molineaux proposed, as to whether a man born blind if made to see on becoming an adult could distinguish by sight a cube from a sphere if both were of the same metal and color. In discussing the subject that judgment often changes our "ideas of sensation," Locke takes up this question and agrees with Molineaux in answering it in the negative. "For," he says, "although he has obtained the experience of how a globe, how a cube affects his touch; yet he has not yet obtained the experience that what affects his touch so and so must affect his sight so and so."

In 1703 Leibnitz took up the question but came to different conclusions from those of Locke.

A few years after this Saunderson, the blind mathematician, was exciting the wonder of England. Having pursued classical studies with success he was drawn to mathematics. He was obliged from lack of means to give lectures which we are told were well attended. He published an Elements of Algebra which is said to have been "full of singular demonstrations." On the recommendation of Sir Isaac Newton he was appointed to the professorship at Cambridge which Newton himself had vacated only a short time before. Here he expounded the works of Newton on light and optics with great success, the clearness of his demonstrations exciting the surprise and admiration of his hearers. He was given the degree of Doctor of Laws by the order of George II.

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We are told that his morals did not correspond with his talents, and although his excesses tarnished his great name yet his fame lived for a century after him. He died in 1739 at the age of 56. His chief interest for us lies in his invention of a calculating board. This was made of wood a foot square. It was divided into little squares by means of parallel horizontal and vertical grooves, thus giving both vertical and horizontal columns. In the center of each little square was a hole, likewise at each corner and in the middle of each side. He provided himself with two sizes of pins which when properly placed in these holes represented figures, each square standing for one digit. Thus a big pin in the center of the square meant zero while a small pin meant one. A large pin in the center and a small one directly above meant two, or if in the superior right hand corner three, etc. By means of this he was able to work out all of his calculations. The same board with the addition of silk threads he used for geometrical demonstration. In 1747 a biography of Saunderson was published in Dublin by his pupil, Wm. Hinchleff, which contained a full description of the appliances used by this blind mathematician. This book we are told "was most eagerly read in France."[1]

The answer of Locke to the question of Molineaux not long afterward received experimental confirmation. In 1728 Wm. Chesselden published in the Philosophical Transactions an account of a case that he had couched for congenital cataract. And although the patient had been able to distinguish day and night and see color in a very strong light yet he did not know color after the operation. "He did not know the shape of anything nor any one thing from another however different in shape or magnitude." And it was only after long experience that he could distinguish by sight his old friends the cat and dog.[2]

Condillac in his "Traité des Sensations et des Animaux," where he treats of his famous statue, takes up the question of Molineaux and Locke and calls attention to the fact the specification of the size and color of the objects was unnecessary since it would be a contradiction to think that he could judge of size and distance and not of form. He also gave a fuil discussion of the observations and results of the Chesselden case.[3]

Condillac was a follower of Locke but in his Traité des Sensations he went beyond his master and made sensation the sole origin of human knowledge. Voltaire called him the "great philosopher." His work became immensely popular and was taught in the public schools and academies of France, so that

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[1] Morley says that such a book does not nor ever has existed.
[2] Phil. Trans., April, May, June, 1728.
[3] Oeuvres Completes. T. III, p. 233. Paris, 1821.

the philosophy of Condillac was the philosophy of France during the Revolution and under the Empire.

The Abbé Deschamps in a work on the education of the deaf also outlined a method of teaching the blind to read and write.

In 1738 Voltaire published a book in which he popularized the work of Newton, and also gave a statement of Berkeley's theory of vision and a discussion of the Chesselden case. Ten years later Réaumur couched a girl for congenital cataracts. Diderot sought admission to this operation but was refused. His disappointment was not great, however, for on a little reflection he decided that only very meager results could be gained from questioning the patient for she would not have sufficient intelligence and skill in observation to make her answers valuable. Hence, he concludes that more could be gained by questioning the intelligent blind. As a result of his meditation on this case he published in 1749 his "Lettre sur les aveugles à l'usage de ceux qui voient." The aim of this Letter was to show "that all knowledge is relative to intelligence; that thought is not the measure of existence, nor the conceivableness of a proposition the test of its truth, and that our experience is not the limit of the possibility of things." Having thus grasped the doctrine of relativity he used it against the standard organization of the time which "made anthropomorphism and the absolute the very base and spring alike of individual and social life."

The Letter is an inquiry of how far the loss of one sense would involve a corresponding modification of the ordinary notions. Diderot paid a visit to Lenôtre du Puisseau the most famous blind-man of the time. He was a son of a professor of the University of Paris and had himself taken courses in chemistry and botany. Afterward he went to Puisseau where he established a distillery and went yearly to Paris to dispose of the products. He slept during the day and worked at night "because he was not then disturbed by anybody." Diderot asked him his idea of an eye and of a mirror. He replied that he thought an eye was "an organ upon which the air produces the same effect as the staff on the hand" and that a mirror was a "machine by which objects are placed in relief outside of themselves." Diderot shows how these ideas are reached by applying the known to the unknown and then asks the question of how many philosophers do the same, with the inference that their results are about as valuable.

He finds that the blind have a greater memory for sound than seeing people and that they notice differences in sound that are neglected by the seeing. Lenôtre told him that he would think seeing people of superior intelligence if experience had not taught him better. On asking him if he would not be glad to

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have his sight, he received the reply that "were it not for the mere gratification of curiosity, I think I should do as well to wish for long arms. It seems to me that my hands would inform me better of what is going on in the moon than your eyes and telescopes; and then the eyes lose the power of vision more readily than the hands that of feeling. It would be better to perfect the organ which I have than to bestow on me that which I have not."

In return Lenôtre asked of Diderot some rather strange questions on color, glass, etc., and if the naturalists were the only persons who could see with the microscope and "if the machine which magnified objects was greater than that which diminished them, if that which brought them nearer was shorter than that which removed them to a distance."

Diderot, also, found that the blind have a very slight sense of shame. For Lenôtre clothes were simply to protect the body from the cold, otherwise he had as lief be without them. This leads Diderot to reflect on the relation of sense to morality and that the morality of the blind and deaf both differ from each other and from that of the seeing. He concludes that the acquiring of another sense by us would make as great difference in our moral ideas as the difference between the ideas we now have and those of the blind.

The remainder of the Letter is taken up with a discussion of why a blind man should believe in God. This was a part of the book in which the people were interested and which gained for it its popularity. In discussing the argument from authority Diderot makes use of notions that we now know under the terms, animal variation, adaptation and the struggle for existence.

In another connection he shows that we have signs for the eye and for the ear but none for touch. This, he thinks, is the reason why blind-deaf-mutes are imbeciles and suggests that if a way of communication with them could be devised they could be lead to form ideas, a feat which was accomplished for the first time nearly one hundred years later by Dr. Howe with Laura Bridgman.

For publishing this Letter Diderot was imprisoned for three months in the Vincennes by Louis XV, "nominally because the book was irreligious but really because he had given offense to D'Argenson's mistress by hinting that she might be very handsome but that her judgment on a scientific experiment was of no value."[1] This act aroused great popular indignation and made him the hero of the hour.

While in prison Diderot was visited by Rousseau. Rousseau

[1] Morley: Rousseau. II, p. 55.

is reported to have actively aided the movement in favor of the blind and even to have suggested a system of embossed printing. This view, however, appears to be a mistake, since he nowhere makes mention of the subject in his works. But he no doubt lent his influence indirectly, for he was much interested in the education of the deaf and got from it many suggestions for his Émile.

The individual initiative which was necessary in order that this experience should be of benefit for the whole class of the blind, was aroused seemingly by a matter of accident. In 1783 a restaurant keeper of Paris, in order to stimulate business, procured the services of eight or ten blind men. These he furnished with musical instruments, racks, music books. These men with large leather spectacles on their noses, apparently looking at their music books, regaled the patrons of this café, we are told, with the "most discordant sounds." The venture was immensely successful and the place was known for years afterward as the Café des Aveugles.

One of the spectators at one of these performances, instead of laughing and jeering with the rest, was affected in a much different manner and immediately conceived the possibility of realizing for the blind what had been done for the deaf. He says:

"A very different sentiment from that of delight possessed our soul and we conceived at that very instant the possibility of turning to the advantage of those unfortunate people the means of which they had only an apparent and ridiculous enjoyment. Do not the blind, said we to ourselves, distinguish objects by the diversity of their form? Are they mistaken in the value of a piece of money? Why cannot they distinguish a C from a G in music, or an a from an f in orthography, if these characters should be rendered palpable to the touch? While we were reflecting on the usefulness of such an undertaking, another observation struck us. A young child full of intelligence but deprived of sight listened with profit to the correction of his brother's classical exercises. He often besought him to read his elementary books to him. He, however, more occupied with his amusements, turned a deaf ear to the solicitations of his unfortunate brother who was soon carried off by a cruel disease.

"These different examples soon convinced us how precious it would be for the blind to possess the means of extending their knowledge without being obliged to wait for or sometimes even in vain to demand the assistance of those who see."

This was Valentin Haüy the "father of the blind." He now made a study of the methods and appliances that the blind who had become famous, had made use of in their work and education. He became acquainted with the calculating tablet of

Saunderson. He learned of the raised letters used by the blind man of Puiseaux and Mlle. de Salignac and of the tangible musical characters invented by Lamoroux.

While he was considering these matters a blind pianiste, Mlle. Maria Theresa Von Paradis, of Vienna, came to Paris where she achieved one of the greatest successes of the season. She had been making a concert tour of the Continent and England and everywhere had been received with great enthusiasm but she received her greatest triumph in Paris. Haüy soon made her acquaintance and was shown the appliances she had used in her education. She was the god child of the Empress Maria Theresa and her parents possessed both rank and wealth so no expense was spared in her education. The blind Weissemberg, who had made use of signs in relief and maps made of strings, beads and various glazed sands in his own education, was her tutor. She "learned to spell with letters cut out of pasteboard and to read words pricked upon cards with pins." Baron von Kempelen, the inventor of the speaking automaton and the mechanical chess player, was also her teacher and invented for her a printing press which printed in ink and by means of which she carried on her correspondence. She also had a "large cushion into which she stuck pins to form notes and letters."

On the basis of these observations Haüy developed a scheme for the education of the blind. And in order to see if his ideas were practical he hired a blind beggar, whom he found at the door of the chapel Bonne Nouvelle, to become his pupil. The result was very successful. A paper read by him and an exhibition of the work of his pupil before the Royal Academy of Science created great enthusiasm. Twelve pensionnaires of the Philanthropic Society were turned over to him and with these and his first pupil, Lesueur, he started his first school for the blind in a small house in the Rue Coquillière.

Here the art of embossing books was invented. This again seems to have been a matter of accident as M. Guilliod one of his pupils relates.

"Lesueur was sent one day to his master's desk for some article, and passing his fingers over the papers, they came in contact with the back of a printed note, which, having received an unusually strong impression, exhibited the letters in relief on the reverse. He distinguished an o, and brought the paper to his teacher to show him that he could do so. Haüy at once perceived the importance of the discovery, and testing it further by writing upon paper with a sharp point, and reversing it, found that Lesueur read it with great facility."

And by making a strong impression of the type on tough paper the invention was completed.

But this, like all other important inventions, had been fore-

shadowed. Letters cut in wood, as we have seen, had early been used for the blind in Italy and Spain. But these were concave and were useless. In 1640 Pierre Moreau, a writing teacher of Paris, had made use of raised letters cast in lead for the blind but the invention came to naught. And by means of some similar device Archbishop Usher had taught his blind aunts to read.

In 1785 the Commission of the Royal Academy presented their report on the work of Haüy and he immediately became the lion of the hour. Musicians and actors gave recitals for the benefit of his pupils and funds came in from all directions.

Haüy and his pupils, the next year, were given an audience by Louis XVI. Haüy became a favorite of the king and was accorded various honors.

It was about this time that he published his Essai sur l'éducation des aveugles. It was printed by the pupils of his school.

The revolution was now approaching and the school was soon in sore need on account of funds. Haüy used up his own little fortune and then tried to eke out an existence by printing hand-bills.

In 1791 the school was united with that for the deaf mutes but this only led to trouble and they were soon afterward separated. Haüy continued at the head of the school for seven years longer but it continued to decline, partly on account of the lack of executive ability on the part of Haüy and partly to his mistake of allowing his pupils to marry, which he permitted from a desire to see them happy. In 1801 the school was united by the government with the Hospice des Quinze-Vingts, an institution for blind beggars. This was more than Haüy could stand so he resigned and kept a private school for five years. He then went to Russia on invitation of the Czar and started a school for the blind. After a few years he left and went to Berlin where he was also instrumental in founding another school but he soon left and returned to Paris where he lived in retirement until his death, in 1822.

For thirteen years after Haüy left Bertrand had charge of the school in Paris. He proved to be both ignorant and inefficient. On his death, in 1814, Dr. Guillié took charge and making some much needed reforms established the school on a better basis. He succeeded in interesting musicians in the school and a number of veritable artists were trained there during his administration. He was, however, unscrupulous and vain, running the school simply to make a show. On account of popular indignation he was compelled to retire in 1821 and Dr. Pignier succeeded him. He developed the art of piano tuning as an employment for the blind. Being of a religious nature he directed the attention of the blind to church music and the organ

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and with great success. It was estimated that in 1882 there were over 200 blind organists in France. The school was reorganized in 1840 and has been doing excellent service ever since.

The work of Haüy soon bore fruit in other lands. In 1791 an institution was established at Liverpool upon a private foundation to teach blind children trades, to sing in church, and to play the organ.

Dr. Blacklock, the blind poet of Edinburg, became interested in the work of Haüy and translated his Essai. He interested David Miller in the work, who after the death of Blacklock, succeeded in interesting others in the project of founding a school and one was started in 1793. Other institutions were soon established in different towns in England.

Dr. Klein established an institution in Vienna, in 1804, and schools for the blind were soon founded in Berlin, Amsterdam, Prague, Dresden and Copenhagen.

Dr. John D. Fisher while pursuing medical studies in Paris frequently visited the institution for the blind with the idea of starting a similar institution in this country. On his return, in 1826, he succeeded in interesting others in the project and a corporation was soon formed and a little aid was procured from the State. He also succeeded in interesting Dr. Samuel G. Howe in the work and he was induced to become the superintendent of the school. Dr. Howe was sent to Europe to study methods and to procure apparatus and teachers. He returned in 1832, bringing with him two teachers and opened a school in his father's house with six "blind persons from different parts of the State, varying from six to twenty years." His work was successful. Funds were contributed, Col. Perkins gave his house and grounds to the school, and the various legislatures of the New England States were induced to make appropriations for the education of their blind children in this school. Thus originated what is now known as the Perkins Institution and Massachusetts School for the Blind.

Dr. Howe did not restrict his efforts to his own institution for he said: "I am very desirous of seeing ample provision made in every part of my country for the education of the blind and I doubt not that I shall be gratified." He gave addresses in many cities of this country and of Canada. And he and three of his pupils appeared before the legislatures of Ohio, Virginia, South Carolina and Kentucky and so impressed were they that they immediately made some provision for the education of the blind in their respective States.

However, the second institution to be established in point of time was in New York in 1833, Pennsylvania followed in the same year, Ohio in 1837, Virginia in 1838 and Kentucky in

1843. The other States rapidly took up the work so that there are now 36 schools with 393 instructors (137 men and 236 women) and 3,665 pupils (1,898 boys and 1,767 girls). In 1899 there were 107 graduates. The value of the grounds and buildings is $6,334,307, and of the scientific apparatus, $100,610. The current expense is $743,119.[1]

Causes and Statistics of Blindness.

The census returns among other data concerning the blind have given statistics concerning the causes of blindness. But these returns, from the nature of the case, are not sufficiently accurate to furnish valuable results. The cases that have been accurately observed for this purpose are relatively few and have been observed by Magnus in Germany, Trousseau in France, and Oppenheimer in the United States.

In regard to the anatomical seat of blindness, Magnus found in 1,037 cases the lesion to be situated, in the order of frequency, in the optic nerve, uveal tract, conjunctiva, retina and cornea.

In studying the causes of blindness Magnus groups the 2,528 cases of blindness of both eyes that he reports under these heads: congenital, idiopathic diseases of the eye, traumatic, and general diseases. Grouping the cases reported by Trousseau and Oppenheimer in the same way we have:

Observer.	No. of cases	Congenital.	Idiopathic Diseases.	Traumatism.	General Diseases.
Magnus	2,528	3.84%	67.08%	10.76%	18.30%
Trousseau	625	3.04%	57.12%	16.32%	23.52%
Oppenheimer	572	3.84%	48.08%	28.67%	19.41%
	3,725	3.57%	57.43%	18.58%	20.41%

The nationalities show some differences here, thus the United States leads in the number of cases due to traumatism while Germany and France exceed in the number of cases due to idiopathic diseases of the eye.

Congenital blindness is found in 3.57% of all cases. The United States Census gives a much higher figure, 8.46%. The most common conditions found in this group are cataract, syphilis, atrophy of the optic nerve and retinitis pigmentosa. Heredity also seems to play a part here, for cataract, syphilis, various malformations and retinitis pigmentosa appear to be transmitted either directly or transformed. Consanguinity only enters as a cause in combining the hereditary tendencies of the parents.

In 57.43% of all cases, blindness is due to idiopathic diseases of the eye. Of these, ophthalmia neonatorum is the most

[1] For this section the author is much indebted to Prof. Anagnos's Education of the Blind.

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common. It is an infectious disease and is due to a specific germ micrococus gonococus and is transmitted from the maternal passages to the eyes of the infant at birth. This disease next to atrophy of the optic nerve is the most common cause of blindness. It has been estimated that it occurs in 30% of all cases in the United States. It is, however, amenable to treatment if taken in time, and Glascott has estimated that in nine-tenths of these cases blindness could have been prevented. On account of this, Germany and nine States in this country have made special laws concerning it. In fact, from one hospital in Germany, the Leipzig Lying-in-Hospital, it has practically been eradicated by proper antiseptic measures. The other more common diseases of this group are diseases of the cornea, uveal tract, detachment of the the retina from a high degree of myopia, glaucoma and idiopathic atrophy of the optic nerve.

Blindness from traumatism is found in 18.58% of all cases. It is especially common in the United States. Oppenheimer found it in 28.67% of his cases, being much greater among the men than among the women. As we would expect this cause figures most prominently in the active period of life but it is also frequently found operative in the first five years of life, the child most often receiving injury to his eyes from playthings. Cocius found the trades in which injuries to the eyes were most common to be (except miners) locksmiths, handscraftsmen, masons, smiths, and machinists. The eyes could be protected by spectacles or suitable guards but the men are averse to wearing them. It is estimated that one-half of the persons who lose one eye also lose the other one from sympathetic inflammation.

General diseases of the body caused blindness in 20.41% of the cases. Here disease of the brain, spinal cord and membranes are the most common of the organic diseases. However, the acute infectious diseases were found by Magnus to be the cause of blindness in 24.8% of his cases. The chief of these were small pox (12.10%), typhoid fever (5.18%), measles (3.46%), and scarlet fever (2.81%). Syphilis, although causing many eye affections, rarely causes blindness. Various poisons as alcohol, tobacco, lead and mercury, also figure sometimes as the cause of blindness.

Occupation has an influence on eye diseases, particularly those occupations in which the work is held close to the eyes and are thus conducive to myopia. While myopia, in the great majority of cases, is stationary, yet in a few cases it is progressive and may end in blindness from detachment of the retina. A large number, although not totally blind, yet are incapable of work.

A number of studies have been made concerning the preven-

tion of blindness. Cohn concluded that one-third of all cases were avoidable. Durr and Steffer and Rössler came to the conclusion that 40% of the cases that they studied were avoidable. Dr. Hays, making a summary of the data on this subject, found that 27.89% were unavoidable, 38.75% were possibly avoidable and 33.35% were certainly avoidable. Regarding one-third of the cases in which avoidability was uncertain as avoidable, and this he thinks is a conservative estimate, he finds that blindness could have been prevented in 46.27% of the cases. Cohn, from a study of the record of 70,174 cases of the Wiesbaden clinic, in 1887, concluded that 39.22% were avoidable.

From a consideration of these figures and the progress of medicine in recent years which has given us antiseptics and the control in a great measure of the ravages of the infectious diseases, of which we might instance small pox, we would expect to find blindness decreasing. And such is the case. In 1880 there were in the United States 976 blind to the million population, in 1890 there were only 880. In England the number has decreased from 1,021 to the million in 1851, to 809 in 1891. Scotland and Ireland show a similar decrease, as also Prussia, Saxony, Holland, Austria and Italy. This decrease is explained as directly due to better treatment of ophthalmia, diminution of small pox and better protection in shops and factories. There are some trades probably in which the number has increased as glass blowers and iron puddlers.

The greater part of the diseases and conditions which we have noted as causes of blindness are of peripheral origin as cataract, syphilis, atrophy of the optic nerve, diseases of the cornea and uveal tract, traumatism, etc. However, there are a number which arise from central conditions or are indicative of some disturbance there as malformations, retinitis pigmentosa, atrophy of the optic nerve, and diseases of the meninges, brain and cord. Where this latter group occurs there is great probability of mental defect. In fact we find the percentage of mental defect much greater among the blind than the seeing. Of 130 pupils registered in one of the schools, 11 or 8.4% were thought to be non-self-supporting even with sight and "as many more might be put in the doubtful list." Counting one-half of these as certain this would give us nearly 13% as mentally defective. This is shown to be near the truth since the history of our institutions shows that 90% of the pupils may be rendered self-supporting. So probably 10% could be regarded as a fair estimate of mental deficiency among the blind. Among the general population the ratio is only 0.2%.[1]

[1] 32nd Report of the N. Y. State School for the Blind.

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In 1876 Geo. Meyer estimated that there were 180,537 blind persons in the world, or one to 1,154 inhabitants. The number of blind in census reports is generally underestimated. After a careful examination of three counties in Scotland it was estimated that the census returns were 15.5% too low. The number of blind in a country varies according to occupation, climate and other conditions. The number of blind per million of inhabitants is as follows:—

Holland (1889),	445	Germany,	870
Canada,	669	France (1883),	947
Scotland (1891),	698	Spain (1860),	1,109
Italy (1881),	761	Russia,	about 2,000
United States (1890),	808	Portugal,	2,190
England and Wales,	809	Finland,	2,226
Sweden (1880),	816	Iceland,	3,400

Thus the United States stands below the average. In 1890 there were in the United States 50,568 persons blind in both eyes. Of these, 7,217 were colored or 945 per million, the proportion being greater among the colored race. The proportion is also higher among the foreign born, being 992 per million.

The proportion of blindness varies according to age. If a curve is plotted it is found that it rises rapidly to twenty, is level between twenty and thirty, then rises slowly to forty-five and then rapidly to seventy-five.

Of the 50,568 blind in the United States, 4,267 or 8.4% were congenital cases. And although the proportion of blind steadily increases with age yet the ratio of congenital blind remains constant to sixty-five years.

The number of blind within the school age, or between five and twenty years, was 5,708 and of these 1,105 or 19.36% were in school.[1]

Climate seems to stand in some relation with the causes of blindness. This fact led Zeune to formulate the law that the proportion of blind gradually increases as we go from the high latitudes to the equator. The law contains a general truth but there are many exceptions. Coast regions have a larger proportion of blind than the high inland regions. But probably the hygenic and social conditions are determining features here. Zeune's law holds for the north, middle and southern thirds of the United States, but there is also a decrease in the proportion of blind as we go West. The States showing the greatest proportion are widely distributed and are New Mexico, Vermont, Kentucky, Virginia, Tennessee, Arkansas and Maine.

[1] Hence the passage of a compulsory education law has been urged in several States.

The Census Report says that these differences "are in part due to differences in the proportion of persons of advanced age in the population, in part to pernicious epidemics of eruptive fevers in certain localities and in part, perhaps, to heredity in certain families."

The blind, contrary to the rest of the population, show no tendency to congregate in cities.

According to Magnus, the period of life in which there is the greatest danger of loss of vision is from one to five years; next comes the period from fifty to sixty years. In the period from five to twenty years the danger is smallest, but it gradually increases from twenty to fifty years. Traumatism enters largely as a cause in the first period and during adult life.

Blindness is more common among men than among women, thus one among every 1,142 men is blind and one among every 1,359 women. Of the congenital blind the proportion of men to women is 550 to 450. Thus the proportion of blind among women is below the average of the world.[1]

Psychology of the Blind.

"Blindness is an incurable total loss of sight." Thus it has been defined but practically all are blind whose vision is so poor that they cannot work at occupations requiring the use of eyes.

The eyes of the normal child are sensitive to light on the first day. But blindness, probably, cannot be recognized earlier than the third or fourth day. The presence of vision is best shown by reflex to light stimulation. This can be tested by flashing light in the eyes but a better test is to call out the reflex by thrusting the hand toward the eyes. The diagnosis is not made sure, however, until the child fails to recognize the mother. The blind child comes to recognize the mother slowly and by the voice. And as mothers are always the last to recognize defect in their own children they frequently wait weeks for this recognition.

As the blind child grows, the physical defects are soon doubled and the moral effects are as profound although less apparent.

The effect of the loss of visual sensations is very great. More sensations are received from the eye than from any other sense organ. The mind of the young child is a veritable *tabula rasa*. Hence the vacuity of mind that the blind child instinctively feels and his longing for something. This results in his becoming miserable if he is not rightly understood. There is a mental hunger for sensations as real and as important as physical hunger. And of the two, mental starvation is the most deleterious. This sen-

[1] For this section the author is much indebted to the article by Dr. Hays in Norris & Oliver's System of Diseases of the Eye.

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sation hunger leads them to adopt various substitutes. They press, rub, and bore in their eyes with their fists which some think a sort of vicarious sight. Some of them with a little light sense move their hands in front of their eyes or look at the sun. They are also prone to rocking motions which are hard to break up. On account of this vacuity of mind Netlicher advises giving the blind much music in order to keep the mind from degenerating.

Jastrow has collected 114 cases of blind persons of various degrees of talent of whom the ages at which they became blind could be determined. Of these, 11 were very distinguished and 10 of them became blind in advanced youth or later life. There were 25 in the group next in eminence and they became blind at nine or ten years (musicians being the earlier). The remainder acquired blindness at about seven years of age. The musicians, however, became blind on an average at three years. "All this," he says, "speaks strongly for the permanent intellectual importance of sight in early education."[1]

The importance of vision for cerebral and mental growth is also shown by the fact that blindness produces atrophy in the corresponding cortical centers. Investigation on instincts have also shown that certain sensations are necessary at the proper time in order that the particular modes of behavior should become fixed and permanent.

The absence of visual sensations makes the perceptions of the blind very different from the seeing. They do not attach the same idea to different words that we do. This the teacher of the blind must continually keep in mind and in a way become a pupil of his charge. The idea that a seeing person has of a room is usually composed of a series of mental pictures, that of the blind man must come from the senses of touch, muscle and hearing and is composed of the distances he can walk, the way his voice sounds and the echoes that it awakes and possibly the touches that he may receive. For the blind "a soft sonorous voice is the symbol of beauty." Blacklock, the blind English poet, associated "some moral quality with visible objects" and probably all congenital blind are like him in this respect.

Lenôtre, the blind man of Puisseau, thought the eye to be an organ upon which the air produced the same effect as the staff on the hand. For him a "mirror was a machine by which objects were placed in relief out of themselves."

Aside from curiosity probably few blind would wish for sight on account of the revolution in their mental life that it would involve. They would have to learn their world over again. For us it would be the same as acquiring a sense for the X-ray.

[1] Fact and Fable in Psychology, pp. 316, 331.

The opinion of Lenôtre on this subject has already been quoted.

Indirectly the loss of sight results in great immobility. The blind child has no one to encourage him to move, so he sits in his corner, rocking in his chair, possibly throwing his arms about and jumping and crying. He walks little and often reaches the age of seven without running. This lack of movement produces bad physical effects. Nutrition is slack. He is anæmic, lean, and his muscles are flabby. Their joints are flexible so that the hand can be bent back to touch the fore-arm. This is one reason, so Netlicher thinks, that they become beggars. But the greatest loss to the blind from their lack of movements is the loss of sensation. We realize this when we compare them with the normal child and his continued movements and sensation hunting. This leads to much delay in their mental growth.

The age at which the child becomes blind has, as we have seen, an influence on his mental growth. The condition of the child becoming blind previous to the age of five or six approximates that of the child born blind.

Jastrow personally examined two hundred blind persons making inquiry, among other things, as to the kind and nature of their dreams. In 58 of these cases the blindness was total. Of these, 32 became blind before the end of the fifth year and not one of these had dreams of seeing. Six became blind between the fifth and seventh year and four of these saw more or less vaguely in dreams. Twenty became blind after the seventh year and "all have dream-vision." So he says, "the period from five to seven years is indicated as the critical one." The visual center needs the sensations for its development and if deprived of them "degenerates and decays." But if blindness accrues after seven years the center can maintain its function.[1]

Dr. G. Hurmann, in 1838, made a similar series of observations. Of 14 totally blind persons who lost their vision before the fifth year, none had dream vision. Four lost their vision between the fifth and seventh year and only one of them had definite dream-vision. And 35 lost their sight after seven years and all had dream-vision. He also found that those who became blind later in life retain this power longer than those who lost their sight near the period of the fifth to the seventh year, although he found two cases in which the power was retained until the 52d and 54th year before it faded out.

Jastrow's cases of partial blindness point to the same time as the critical period. This has also been found to be the critical period for mutes. He likewise found that the earliest remembered event among 100 blind persons gave an average age of 5.2 years.[2]

[1] Jastrow: Fact and Fable in Psychology, p. 342.
[2] Fact and Fable in Psychology, p. 345.

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The senses of the blind are commonly thought to be much sharper than those of seeing people. And many stories are told to prove the point. Saunderson could distinguish by touch the true from the false among a number of metal pieces. We are also told of a butcher of Bologna who could tell by touch the weight of an animal that he was going to kill. He knew "weights and moneys" and did all of the business of a butcher. But those that come in contact with the blind are convinced that their senses are no more acute than those of seeing people and that there are as great individual differences. Their condition compels them to observe differences that are neglected by seeing people, hence, their so called sense acuteness is more a matter of apperception.

Prof. Griesbach, of Basile, made some experiments upon the senses of the blind. His "observations were made upon those otherwise healthy. In the power to receive impressions by touch, no remarkable difference was noticed between the seeing and the blind; or if small differences did exist they were in favor of the seeing. In those born blind, the tactile sharpness was somewhat less than in the seeing, and in some cases the sensorium generally was equally defective. In the capability of localizing impressions by sound, no difference existed between the blind and the seeing, nor in the acuteness of hearing. In both, great individual variations occur. No difference was observed between the two classes in regard to the acuteness of smell. In the execution of manual labor the blind became fatigued sooner than did those of equal age who could see. The blind were much more fatigued with manual labor than with mental work, which was not the case with those who could see. Both among the blind and the seeing there were persons who had many, others who had only a few, and others again who had no illusory or erroneous impression of touch."

Hocheisen experimented on the touch of seven blind and two seeing persons with the compass points. The places tested were the back and palm side of the phalanges, palm and back of the hand, and palm and back side of the wrist. From an average of fifty tests he concluded that the sense of touch was no finer among the blind than among the seeing and that the objective acuteness of the trained blind is due to psychical causes, who, by attention, notice neglectible differences.

Lucy P. Brownell repeated the experiments of Hocheisen on four blind and four seeing persons. She found much individual variation, and that the right hand did not correspond with the left, and that the index finger is usually the most sensitive. She finds no greater fineness of touch among the blind than the seeing. She finds that reading does not make the finger more sensitive. Movement is a very important factor in reading and

without it the blind are practically unable to read, hence, reading would not increase the fineness of discrimination of the compass points.

The phenomena of "face perception" in which they seem to see by the skin is really their ability to appreciate delicate sensations of touch and heat. But it is usually only the presence of very near objects that they can tell in this way. Saunderson when assisting in making some astronomical observations was able to tell when a cloud passed between him and the sun. And Lenôtre du Puisseau could estimate the distance of fire by the degrees of heat and the nearness of large bodies "by the action of the air on his face."

Touch and hearing are the substitution senses of the blind. The ear performs many of the functions for the blind that the eye does for the seeing. Like the eye, it gives knowledge of things at a distance. It gives them some sensation of space, for one of them says "When I am in a vast plain it seems to me that I have lost my hearing." By it they can recognize the age and size of persons and judge of their temper. By it they can judge of the size of the room that they are in or whether they are in a street or alley. By it they recognize the position of persons and of furniture in a room and tell whether the latter has been disarranged or not. The ear is the chief guide in walking and by the echo they tell whether they are walking beside a fence or not and of the height of the fence if it is not greater than their stature. They can also tell the material of which the fence is made, whether of wood, iron, or stone, and of the way it is built, as picket, matched boards, or gas pipe. By the echo they tell the position of trees, posts and obstructions. The echo also enables them to walk straight and to tell the positions of gates and doors. Anything that interferes with this echo, as snow, loud noises, or rubbers on their feet disturbs them very much and renders walking more or less difficult or impossible. In walking the touch of the feet also helps them to walk straight and tells them of the kind of walk, as flagstone, brick, concrete, asphalt or earth, and also of its slopes or depressions.

The blind have a reputation for having a good memory. What they do know they know more tenaciously. Eye knowledge is more illusionary and more easily corrected than other sense knowledge, hence, the latter is more stable and fixed. They acquire more easily from hearing than seeing people. Du Puisseau could recognize the voice of a person that he had heard only once. And, as we have seen, the annals of the empire were kept by the memories of the blind of Japan.

The emotional life of the blind is limited. They are spoiled by tenderness and become vicious. A sense of imperfection

broods over them, and those that are with them should aim more at making them feel satisfied than satisfying them. The ennui of life is increased but does not lead to suicide. They are timid, and modesty to them is imaginary. Disputes among them are rare.

They are individualistic and have a taste for independence and liberty and are lacking in friendly and social emotions. Since their knowledge of the emotions of their fellows only comes to them through the ear, they lose much of it and hence lack in sensibility. We learn by seeing, but they get it only by inflection. "A soft sonorous voice is to them the symbol of beauty." The uplifting power of nature and the beauty of the earth, sea and sky is to them unknown.

They are given much to reflection which is concentrated upon themselves, hence, self-love is their most prominent defect. They are as self-conscious in public speaking as the seeing. They dislike to be helped and thought incapable of getting around. They are easily led to become suspicious and pity has a bad effect upon them.

The sex impulse manifests itself at puberty. And flirting is noticed among them as well as among the seeing. Self-abuse is thought to be quite common among them. But this may be due to the fact that they are more easily detected in it. However, their sensation hunger and the tendency to stimulate other senses for those wanting would impel them towards it more than the seeing. Hence, all authorities seem to agree that the boys and girls should be educated separately.

The blind are given to reflection and have great facility for analyzing and synthesizing ideas. They are not so easily deceived by the appearance of things and their judgment is truer. They have a great desire for knowledge and unusual powers of imagination.

The ideas of the blind are different from those of seeing persons yet they must use the same language with the result that it is poor and difficult. Some poets have been blind but it usually came on them late in life. The English poet Blacklock, however, lost his sight in infancy. It is said that his "productions are marked by elegance of diction, ardor of sentiment and accurate description of visible objects" but "his works will be searched in vain for poetry of a very high order." He always "associated some moral quality with visible objects." Some blind people use language with the precision of the seeing. This, it is thought, is to be explained on the basis of something analogous to colored hearing.

In regard to the will of the blind it is to be noted that the will has less control over the ears than the eyes. In later life they are strong willed and positive. They stick very tenaciously

to a trustful person. Subjecting them to pity and making them suspicious by watching is very bad on their morals. They should be made trustful and helpful. Conscience is not as influential with them as with the seeing. They are very religious. Their sense of helplessness, which is regarded as one of the roots of religion, is supposed to account for this. However, their defect renders them incapable of fully appreciating religious services.

Pedagogy of the Blind.

The strong sympathy or pity aroused in the minds of mother and relatives by the condition of the blind child leads to excessive care on their part much to the detriment of the child. They care for him, wash and dress him, anticipate his wants, in fact do everything for him, and permit him to do nothing for himself, thus rendering him incapable of doing anything. Or the mother with the many duties of a large family may not be able to give him the attention that he demands. In either case the child remains inactive, sitting in his rocking chair in the corner amusing himself with whatever sensations that he may be able to excite, being fearful of movement since he is continually cautioned or receives no proper encouragement. Hence he becomes pale and anæmic with awkward and inco-ordinated movements and flabby muscles, and so incapable of properly appreciating the few sensations that he does receive. The education of the seeing child begins at birth, but too often that of the blind child can only be said to properly begin with his school life.

The blind child should walk as soon as the seeing child. But in order to do this he needs much more training. They should be left to walk by themselves, and should be given exercises in walking up and down stairs. Netlicher thinks that they should early be taught to use their left hand as a feeler, and so walk with the left shoulder first. This will also aid them by getting the wind in their face. They are more liable to walk in a circle than a seeing person who is blindfold, this is thought to be due to the fact that they can see more with one eye than with the other, and that one side is better developed than the other. They should, also, be practiced in walking where there are obstacles, and taught to walk planks and spring ditches in order to give them confidence.

Much attention should early be given to the toilet. They should be taught to dress themselves. It is difficult for a blind child to tell when his face is dirty or whether their clothes are in a neat condition. They must be taught to comb the hair and to keep the finger nails clean. It is difficult for them to use a spoon and to tell when it is right side up, so they have

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to be taught. Much training is necessary in order that they may know that it spatters when placed in the soup.

Much attention must also be early given to teach them correct postures and attitudes. Since they cannot see they are given to stooping and making faces and grimaces. They rub and bore in their eyes. They are very prone to rocking and automatic motions. These are very hard to check, and tying the hands is sometimes necessary. They also have a tendency to tap everything and to hold their mouth open in order to hear better.

The prestige of convention is lacking with them. They are ignorant of decorum and social decencies that the seeing child acquires almost without knowing it. They do not know that it is proper to turn the face toward the one speaking and not to gap and sneeze, etc. They must be taught how to stand in dressing so as not to expose the body.

Since the blind have to spend their lives among the seeing, to all outward appearances they should be taught to be as much like them as possible and so become as agreeable as possible. They have no consciousness that their habits are bad or their attitudes disagreeable. The blind are always noticed by strangers and subjected to more scrutiny than seeing people, so it is a kindness to them to correct unsightly habits, and the earlier this is begun the more successful it will be.

The education of the seeing child begins at birth, and play is the greatest educational factor of his early years. The blind child must be early taught to play, both for its physical and mental as well as moral effect. However, great care should be exercised in this to develop proper initiative on the part of the child. He should be bounteously supplied with toys, especially those which are models of the things of real life, such as houses, horses, wagons, soldiers, fire engines, animals, etc. He should be taught all the games of seeing children and be urged to do all that seeing children do.

The age at which the children are received into the schools for the blind varies in the different States from six to nine years. But the "observation of the disastrous mental, moral and physical effects of neglect and ill usage upon blind children before reaching the school age" has led some schools (private) to receive them much earlier, in one place as early as three years. The results of this are that the State is saved hundreds of dollars, for it is well established that the "nervous and shattered physical condition of some of these neglected waifs retard their progress in the kindergarten and primary department for a long period." But if a little attention were given to making the childhood experience of the blind as full and complete as possible this action on the part of the special

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schools would be unnecessary. In fact all seem agreed that the association of the blind with the seeing child should go as far as the second or third year of school life, even if no special attempts are made to teach them to read. Indeed such action on the part of the child will save him one or two years in the special school.

The kindergarten is a most effective institution in the training of defectives. On account of the poor condition in which the blind children are brought to the schools, some think that all of them should be given the kindergarten training until nine years of age. It is the most effective means for reaching and developing them. It arouses them, wakes them up and puts them in touch with their surroundings. The mat weaving, card sewing, clay modeling, paper folding and games make the blind child more alert, sharpen his perceptive faculties, give him better use of his hands and make him more considerate of others. For training the hand as hand also trains the brain. In fact this training gives them an impetus which is felt through the remainder of their school life.

The kindergarten work in the best schools for the blind is the same as in the schools for seeing children, not even the color work is omitted, for some of the children can see a little, and those who cannot delight to talk about it.

The sensation starvation to which the blind in a greater or less extent are subject makes special sense training a necessity for them. Other senses must be substituted for vision, these are hearing and especially active touch. Their fingers have to be ten eyes for them. They must be taught what birds, insects and the various forms of animal life are. They have, also, to be taught to distinguish metals and coins. Models are necessary to teach them the form of houses, churches, hills, valleys, railroad trains, steamboats and all objects that are too bulky or otherwise incapable of being handled by active touch. The teaching and demonstration work, which among the seeing appeals to the vision, must be made to appeal to the touch of the blind, hence the need of tangible apparatus for science and of relief maps for geography. Again, people assume lack of knowledge of things not touched, so things must be placed in terms of touch as seeds, metal, glass, fruit, insects, etc. And such work should be arranged so as to lead to motor response. The blind, like all others, learn best by doing, hence the introduction of manual training and especially of Sloyd which seems especially adapted to them. The knowledge of the use and manipulation of tools is useful not only for motor training but as leading up to the trades which some of them must follow in after life.

Physical culture is much needed by the blind to develop and

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give them control of their weak and flabby muscles. Besides the direct physical advantages gained it gives them "confidence of bearing and grace of carriage, sharpened mental faculties, greater self-control and reliance," and helps them to overcome the timidity which is aroused in them by their being continually warned of danger.

All forms of active games have a place here as skating, dancing, bicycle riding, etc., as well as the more systematic gymnasium work.

The sense of smell, which is comparatively little used by the seeing, is capable of giving much information, and among the blind it should be trained by full courses.

Hearing is the educational sense of the blind. From it they get their greatest profit and enjoyment. The methods of reading and writing for the blind are at best cumbersome and but little comparatively is written in them. So they have to place great dependence on their ears. The power of attention through the hearing should be cultivated to quick perception and strong retention. To this end oral instruction, conversations, readings and addresses are useful, as also the musical training.

The curriculum of the schools for the blind is the same as that for seeing children in the grades and the high school, for all of the schools aim to complete the high school course. And the work differs only in that much more attention must be given to sense perception work, especially to the cultivation of touch and hearing.

In the high school the usual amount of attention is given to literature, history, rhetoric and mathematics. Blindness acts as a serious obstacle only in the science work, which, of course, they are unable in great part to pursue according to the usual laboratory methods. Hence the amount of science work varies a good deal. Physics is taught in all of the schools. The other sciences are also taught, and they are, in the order of frequency, geology, chemistry, physical geography, zöology botany and astronomy, while psychology and mineralogy are mentioned. Latin and one of the modern languages are offered by most of the schools although all of the scholastic languages are offered by some schools. One school offers ethics and philosophy. Typewriting is taught in all of the schools at present, and offers a most convenient method of communication with their seeing brethren. Some have been able to use it as a means of support.

There has been a movement to establish a national college for the blind similar to the Gallaudet College for the deaf at Washington. But the movement has been abandoned for it is thought that these ends could be best attained by giving scholarships at the colleges already established. It is felt by those

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interested, that the establishment of a separate college for the blind would tend to mark them off as a separate class, which is now considered undesirable.

The spècial problem that arises for solution in the instruction of the blind is the devising of means for teaching them to read and write which shall be both practical and efficient. We have already mentioned the early attempts at the solution of this problem and finally the invention of embossed printing by Haüy. He made use of the Illyrian or Sclavonian alphabet, the same that St. Jerome had used in the Vulgate. Large editions of a few books were printed which created great enthusiasm among the seeing but were not well adapted for the blind for they were eventually sold for waste paper. Later, however, this type was improved by being made smaller and of a more open and perfect form which made them more easily distinguishable.

James Gall, a publisher of Edinburgh, saw one of these French books and became greatly interested in it for here he saw a means of giving the Bible to the blind. He procured some of the French types, but soon saw that their defect lay in their lack of legibility to the touch, so he set about improving them. He concluded that the capitals were too symmetrical and uniform to be distinguished by touch, so he adopted the common lower case type. These he changed by making them larger and more open and angular. This has since been known as the triangular system, and was printed in high relief and was easily read.

An ingenious attempt was made at the Glasgow asylum to form an alphabet of knots in a string. And books composed of balls of string were formed after this method. But needless to say it soon fell into disuse.

A prize of twenty pounds, offered by the Scottish Society of Arts, in 1827, for the best alphabet for the blind, called out the Alston alphabet. It was composed of boldfaced Roman capitals. This was the alphabet that was introduced into the Pennsylvania Institution by Friedlander.

The next system in the field was the stenographic devised by Lucas, of the Bristol Institution, in 1837. The letters were formed of curves, strokes and circles similar to those of the Pitman phonography. It was adopted by several schools in England, but was found to be difficult.

About the same time Frere invented the phonetic system in which the sounds of the language were represented by stenographic looking signs. This system was easily learned, especially by old people, but was said to be hard on their pronunciation. It was only adopted by one school.

The Moon system is composed of nine characters formed of

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arbitrary lines; these are arranged in different positions so as to give some resemblance to the Roman letters. It makes use of "return lines," but does not reverse the letters. The letters are large and easy to read by touch. A boy that had been unable to learn the other systems after five years work learned this one in ten days. However, the books in this type are large and costly. It is said to require sixty volumes folio to print the Bible in this type. It is easily learned by persons who lose their vision late in life, and since the majority of the blind are over fifty years of age the system is still quite popular. Over 195,000 volumes have been printed in this type, and in 420 languages and dialects. There are two printing houses which use this type, one in London and the other in Philadelphia.

Soon after the Massachusetts school was established Dr. Howe gave his attention to devising a system that would be easily tangible but at the same time easily read by sight. The result was the so-called Boston line type. He used the lower case Roman type, but made the letters more open and angular. It received the first prize at the London Exhibition of 1852. Backed by this endorsement, and the authority and energy of its author, it soon became the predominant system in this country, even the Pennsylvania Institution adopting it.

The attempts so far have made use of lines, and most of them have tried to approximate the Roman type. For it was thought that by making use of an artificial alphabet the tendency would be to make the blind a class apart from their seeing brethren. But the difficulties of the line systems directed the search for a type for the blind in another direction. It was soon found that a series of points can be much more easily perceived by them than a system of lines. So point alphabets for the blind stand on a more scientific basis than the line alphabets.

The first attempt in this direction was made in 1825 by Chas. Barbier, of Paris. Five years later this system was taken up and perfected by Louis Braille, of the Paris school, and it has gone by his name ever since. The basis of the system consists of a cell of six points arranged in two vertical rows. The omission of one or more of these points give the signs for the various letters, figures, punctuation points and mathematical signs. Also it includes a complete musical notation.

Besides its legibility, Braille has another important feature which the line types do not have, and that is it can be written by the blind. This is done upon a writing board provided with a guide by puncturing the paper with a stylus, but it must be written in the reverse order, so that the blind have to learn two alphabets, one for writing and the other for reading.[1]

[1] M. Dussaud has recently invented a writing tablet in which the

This system was very slow in being adopted, for although it was used by individuals yet the Paris school did not adopt it until 1854. But it finally came to be used in the schools of France, Switzerland, Belgium, Holland and Rio Janeiro. Braille was introduced into England in 1853 by Johnson in a book entitled "Tangible Typography," but in 1868 it was little known. When adapted to English it became cumbersome and wasteful for it did not make use of the principle of recurrence, that is that the letters most used should be represented by the fewest points. It had antiquated contractions and abbreviations and allowed of "bad use" like the omission of capitals, etc.

As we have seen the line type became predominant in the schools of this country. But eventually it became apparent that many of the blind could not learn it. In 1868 Wm. B. Wait, of the New York school, found that after two years instruction 32% of his pupils could not read, and in one large school 58% of the pupils were non-readers although some of them were the brighest pupils in the school. In all he collected statistics of 664 pupils in his own and in other schools and came to the conclusion that only 34% of them learned to read the line type with "pleasure and profit." So he set about to devise a new system. He determined that writing for the blind should respond to the following tests. It should be tangible, it should be capable of being written, it should be adapted to mathematics and music and the characters should be equivalent to and correspond with the seeing characters for which they are a substitute. Line type fails in tests one and two for it is not tangible nor capable of being written. Line is deficient in variety and intensity for touch. Change is necessary for perception by touch, hence points are more tangible than lines. So he made as the basis of his system six points arranged in two horizontal lines. He preferred the horizontal arrangement because it made fruitful the principle of recurrence, it is more capable of abbreviation and also expansion and also offers the basis for the formation of a system of shorthand. From tests on his pupils he concluded that all blind persons could learn this system, for the 32% of his pupils that were unable to learn the line print after two years of instruction learned his system after eleven hours work. This is the so-called New York point system. At the next convention of the instructors of the blind it was resolved that New York point should be taught in all the schools. A national printing house was shortly afterward es-

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impression is made upward, thus enabling the child to read what is written and obviating the use of two alphabets. See "Appareils pour les Aveugles." Comptes Rendus de l'Acad. des Sciences. 10 Feb., 1902, p. 375.

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tablished at Louisville, Ky., for furnishing books in this type. In 1893 it is said that most of the schools preferred this to line print.

This invention follows embossed printing as the next great advance in the methods of instruction of the blind. Its chief advantages of tangibility, and that it could be written, were of great importance to the blind for it placed them more on the basis of seeing pupils. It made them more self-dependent, and by being able to read and write they were thus enabled to rely less on oral instruction.

In 1892 Mr. Smith, of the Perkins Institute, promulgated a modified form of Braille known as American Braille. He attempted to combine the best features of New York point with the Braille system. He eliminated the defects of old Braille and adopted the principle of recurrence. Its points of excellence are said to be that it is best in point of space, is less laborious to write, is easier to comprehend and more elastic. And it is claimed that it is superior to New York point in that it does not waste linear space, has a better system of punctuation and does not permit of such long and undesirable characters.

Shortly after this system was promulgated a typewriter for writing Braille was invented, and a little later a stereotype maker for embossing metal plates. With this latter machine and a few appliances each school can have a printing office of its own. These two inventions greatly increased the spread of American Braille. So that now the contest for supremacy lies between it and New York point. This, although a seeming wasteful process, must be beneficial in the end in selecting the best system.

However, the line type still has its advocates who favor it for reading although the point must be used for writing. It is claimed that the pupils themselves favor it when properly taught. For they claim that they can read it better, that it is less fatiguing, that it does not irritate the fingers like the point, that they can understand the punctuation better, and that on the whole it is more pleasing for the seeing can see what they are doing. The advocates of line point out the process of learning is not so different after all, that the point print is much more easily injured and disturbed. And they claim that any system like point must be defective that depends on position, reversion and substitution.

Large and well selected libraries exist in all systems which are being continually increased. One school has a library of 13,000 titles, over 7,000 of which are in American Braille.[1]

[1] In 1882 the Boston Public Library established a circulating library for the blind. Thirteen years later one was established in New York,

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There are two systems of music notation in use, the New York point and the Braille. The same contest for supremacy exists between these two systems. The tendency seems to be toward the Braille since it seems to be more complete and more easily handled than the New York point. The Braille is the same the world over, and it has the advantage of a larger amount of printed music.

As we have seen, the blind mathematician Saunderson, was probably the first one to invent a cyphering tablet. Many have since been invented, but that by Taylor is probably the best. It consists of a board in which are columns of octagonal holes. Square pins fit in these holes, thus giving eight positions and when reversed eight more. On one end of the pin is a raised edge, on the other this edge is divided by a notch. The sixteen positions afforded can thus give signs for the digits and the algebraical signs.

Thirty-nine States and Territories have established schools for the education of all those persons of school age who cannot profitably attend the public schools on account of defective vision. In addition to educating them the schools propose to render their pupils capable of self-support.

Music occupies a large place as a culture study in all schools for the blind. And it is taught to all pupils that show any aptitude for it. Many of the blind have adopted it as a profession, and in it they have probably won their greatest renown. Some have become teachers, while probably more have earned a livelihood by playing the church organ. But it is probably in piano tuning that the blind are best able to compete with their seeing brethren. It is a trade that demands high mental training, but not such great mechanical ability. It is taught in many of the schools, but it is found that only a small per cent. have the ability to become professional tuners. To succeed here as elsewhere the blind must be better trained than their seeing competitors.

Various trades are taught at all of the schools. The most common of these are broom making, cane seating, mattress making and upholstering. The girls are taught to sew, knit and crochet. Other have been introduced at various times but have been dropped. "Most of the institutions for the blind in America," says Mr. Anagnos, "have tried the experiment of introducing one trade after another with the view of securing gainful employment for their graduates and apprentices, but without avail. Such industries as seemed to give promise

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Philadelphia soon followed, and a reading room for the blind was provided when the new Congressional Library building was occupied. There are now eight other cities that provide circulating libraries.

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of fair profit have in turn been taken up only to be dropped after a few years experience as inadequate and unprofitable. Thus every attempt to utilize various mechanical arts and render them reliable sources of income has failed." This is due to the difficulty that the blind mechanic has of competing with the seeing one and to the difficulty of marketing his product. It is very often as a business man and not as a mechanic that he fails. Again, the use of machinery has thrown him out of the trades in which he formerly found employment. Then the course at school is too short to teach a trade with the best results, and they do not attain the skill that they would if apprenticed. It is often the case that the pupil is only becoming skilled when he has to leave school. The value of a trade to the blind depends on the business conditions of the community and of course varies from place to place. Brush making, which was formerly taught, is no longer profitable, and cane seating is no longer much in demand. Broom making still remains the trade most suited to the blind, and is taught in nearly all of the schools. It is easily learned, and hence is suited to those dull mentally, the ones that have to depend on their hands for support. Yet even here it is found that although all can size the corn yet only 90% can learn to sew and only 50% to wind properly. And to be able to succeed here the product of the blind man's work must be able to compete successfully with that of the seeing. So it is not as hand workers but as brain workers that the blind succeed best as the history plainly shows.

We are told that the words masseur and blind are synonyms in Japanese, and indeed it would seem that it is a profession particularly adapted to them. Massage has recently been introduced as a professional study in the school for the blind at St. Petersburg, and its promoters are very enthusiastic concerning it. The instruction includes anatomy, physiology and technique. Skeletons and manikins marked in Braille and wet specimens are used in instruction, and also a rubber manikin for practice. The course includes a period of actual practice in hospital work before the pupils are sent out for private practice.

However, there is no employment or profession in which the blind are not found. According to the 11th census the employments in which the blind were most numerous are in the order of frequency, farmers, laborers, carpenters, merchants, mechanics, teachers, miners, clergymen, peddlers, physicians, shoemakers, tailors, and some were even artists, photographers, engravers and painters.[1]

[1] There are nine working and industrial homes for the blind in the United States. These are situated at Oakland, Cal., Knoxville, Iowa,

How many of the blind do succeed in supporting themselves after leaving school is difficult to determine for many are lost sight of, especially the girls. The New York State School claims that 90% of their pupils are self-supporting. Truly a high percentage when we consider the proportion of mental deficiency among them. In 1878 a census of the graduates of all the schools was taken, it showed that: "16 became superintendents of other institutions; 214 became teachers or were otherwise employed in institutions; 34 became ministers of the gospel; 84 authors, publishers or lecturers; 310 were engaged as teachers of music or were vocalists outside of institutions; 60 had been organists in churches; 125 piano tuners; 937 had been engaged as teachers, employees and workers in handicraft; 277 were storekeepers, etc.; 45 became owners and managers of real estate; 760 (mostly women) were employed at housework at home or in families, or at sewing machines, or by hand, and 78 were in homes of employment."

In 1880 of the 48,928 blind persons in the United States 2,560 were in almshouses, but here "it must be remembered that blindness is an affliction of old age."

According to the report of the New York institution for 1879, "More than 1,200 persons have been instructed, and have gone out from the institutions for the blind in this State, only 21 of whom were found to be in almshouses on the 30th of October, 1879." Such facts give great force to a statement made by the board of State commissioners of public charities upon this subject. They say: "As observation shows that educated blind persons seldom become a public charge, it would seem important, not only in its social bearings, but as a question of political economy, to bring as many of the blind as practicable under proper educational training." To meet this condition many of the schools favor a law enforcing compulsory education of the blind.

Psychology during the past twenty-five years has had much to learn from pathology and pedagogy would no doubt gain as much from a study of the methods of instructing defectives. And, indeed, the influence has been shown in one of the great classics. Rousseau lived near the school where Pereira was teaching the deaf to speak, and was often an interested visitor at the school. As a result "the book of Emile is full of experiment upon physiological teaching which could only have originated in the school for deaf mutes; so identical are the theories of the book with the practice of Pereira."[1]

Louisville, Ky., St. Louis, Mo., New York City, Iberia, Ohio, and three in Philadelphia, Pa. In 1892 these had a population of 266, and their sales amounted to $91,000. Mentor, Vol. I, pp. 170-171.

[1] Seguin: On Idiocy.

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Although the teachers of defectives had to consider "the standpoint of the child" in the formulation of their methods, yet the prevailing educational theories of the time dominated them and gave the prevailing direction to their practice. They held to the typical ideal man and consequently to the average child who was to be transformed into this ideal. The blind child shows a vast mental lacuna due to his lacking sense. He is deficient in the sense which gives knowledge of form, color, size and relation. Consequently, in order to make him as much like the seeing as possible, one must seek by means of a substitution sense to give him this knowledge. Touch came the nearest to filling this need, and "touchableness" became the end of the pedagogy of the blind.

Perception involves clear and distinct apprehension and the power of reproduction or perception expression. For the blind this means the apprehension of things through touch and consequently the emphasis of sense training and Pestalozzi's perception principles.

But do touch and vision agree as much as they seem to at first sight? Although touch wants the series of light and color yet it can give us form and size. But a great many objects that are capable of being grasped give no or an uncertain *vorstellung* as, for example, insects, flowers and the small forms of plant and animal life. With objects of large dimensions as woods, fields, city, roof, the case is the same. Touch can give no idea of these, or even at best only a very indeterminate and inadequate one. Magnified and diminished models are used, but seem to be of doubtful worth. Teach a blind child about mountains by means of little piles of sand, or of rivers by artificial rills. The memory image connected with these words will be that of sand piles and rills, and leads consequently to a very inadequate idea. His idea of distance is much less adequate than that of a seeing child. In fact the blind have not sufficient spatial imagination to translate such models into their proper space relations.

Æsthetically the sensations from touch are not the same as from sight. Expressive states do not mean the same to the blind as the seeing They do not get the same ideas from statues and works of sculpture, for the secondary sensations of hardness, coldness and smoothness enter in and cause more or less interference.

It is impossible to have the blind form perceptions like the seeing. For no matter how much time and trouble were spent to gain this end yet there would always remain a difference.

Hitschmann, himself a blind man, contends that they do not think in touch terms, but in what he calls a "substitution idea" which, he thinks, is similar to the general idea of the

seeing. This seems to arise more from the definition of the thing than from experience.

Among seeing people the types of imagination that are found are visual, audile and motile, and if touch terms do appear they are not of definite objects, as tingling from injury, pricks, cuts, blows, goose flesh, etc. The same is true of the touch hallucinations of the insane.

In fact it appears that touch does not give us a definite picture of a particular object, no definite series of touches is associated with a special object. The touch sense differs from the other senses in that its end organ is distributed over the whole body, and any part of the end organ may be brought in contact with an object. And since the tactile corpuscles are variously distributed, the resulting touch picture would depend on the part of the skin stimulated. True the fingers are regarded primarily as *the* touch organ, but here the sense of touch seems to serve more as a guide to motion than to be exercised for its own sake. We have seen that the blind differ from the seeing in the acuteness of their active touch and not in passive touch.

The blind-deaf-mutes are supposed to think in touch or motor terms, but this seems to have been reached by a process of exclusion. Laura Bridgman while thinking formed the words in the manual alphabet also when dreaming.

So it would seem from general consideration that Hitschmann is right in his contention and that the blind must think in either auditory or motor terms. Motor terms must play a large part in their mental acquisitions for it is their chief sense of gaining a knowledge of spatial relations.

There has been a tendency to bad practice on the part of those who make "touchableness" the end of pedagogy of the blind. For it has led them to overburden the mind with the concrete too often leaving generalization to take care of itself.

All this goes to show that we cannot apply the pattern of the seeing to the education of the blind. Their own standpoint must be studied and their particular capabilities developed to the fullest extent. Only then will our practice be sound and only then will we be doing all that we should for this afflicted class.

These considerations will also change the direction of the emphasis in our sense training work. The ear is the educational sense of the blind. Most of his information is received through it, and probably most of his thinking must be done in auditory terms, and the bulk of his knowledge is knowledge of definition. So in training the ear we are training his most useful and important sense.

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THE TEACHING OF ENGLISH.

By ALEXANDER F. CHAMBERLAIN.

English is probably both the least-taught and the worst-taught subject in the whole educational field. It is bad in the grade schools, worse in the high schools, worst in the college, while the university reaps the full benefit of this evil *crescendo*. The "English" of the modern curriculum varies from a silly combination of "Mother Goose" and the jargon of science or the shibboleths of religion to a disingenuous synthesis of antique philology and emasculated literature. No wonder some of the men and women who speak and write their language well would extend to prose the judgment passed upon poetry: English untaught is taught best. A teacher of English is so often a spoiler of English. Sometimes the only advice to a young man (less often a young woman) contemplating a serious composition in his mother-tongue is that of *Punch* in the case of marriage: Don't. How does it happen that a man like John Bright, who never had the advantages of a classical or a college education, spoke and wrote perfect English, while our well-trained men of science can often do neither?

In the present brief essay the writer, from his own experience and investigation, desires to discuss some of the causes of this state of affairs and to suggest some common-sense remedies.

A New Orientation. Before we can expect good English both teachers and pupils, together with the public interested in educational affairs, must orient themselves anew concerning the origin and development of their mother-tongue. The study of English seems about the last place to feel the full effect of the Darwinian revolution. With wonderful obstinacy it keeps its face towards the setting instead of the rising sun, towards the past rather than the future. It would be a decided advantage were every teacher compelled to take a course in modern Chinese instead of in ancient Greek, for then he would possess some useful knowledge about the form of human speech most akin, psychologically, to his own and not so much useless lumber concerning that one most remote from it. Herein lies the essence of the new orientation. Let us study English in its relation to the only tongues that can ever compete whit

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it for the mastery of the world,—Russian, Chinese, Japanese. The recognition of the psychological kinship of English and Chinese in particular may be of more moment to the race than was the discovery of the linguistic unity of the Aryan of the Indus and of the Thames. The Greek, Latin, and Sanskrit aspects of English have been fearfully overdone. We must exorcise the ghost of Max Müller and hold our *tête-à-tête* with the living yellow man who clings to his speech and propagates his kind so well. We can be very sure he will still be numerous and interesting when the last English grammar has been written. A course in Chinese will reveal to the teacher in convincing fashion that his language is a vehicle of thought and not a museum of grammar, and that, in matters of speech, the brains of 400,000,000 Mongolians and 100,000,000 Anglo-Saxons have moved upon remarkably similar lines representing, psychologically, the high-water mark of human achievement. This is the best antidote for the classical nostrum,—to be taken *quant. suff.* The study of English must be keyed to the *future* not to the *past.*

A Broader Field of Comparison. Some of the poor character of English teaching is certainly due to limitation of the field of comparison. The individuality of the mother-tongue has been lost sight of and its special virtues underestimated by the long-continued over-valuation of the merely formal qualities of Greek and Latin. A like effect has been produced by what Lenz calls the "deification" of Sanskrit. Under the pernicious influence of the classicists, the so-called "modern languages" of continental Europe have been simply pitied or despised, until the crying needs of commerce and world-politics forced them into the educational field. The neglect of the other living languages of mankind has been absolute,—the new facts gained from the investigation of Asiatic and American Indian families of speech have not yet come into the ken of the "expert" in English, who is wofully ignorant of the general principles of linguistic evolution and often the exponent of some artificial system of instruction in which the grammar, the dictionary and the text-book take the place of living thought and its genial expression. A good waking up of the teacher along this line is absolutely necessary. Some up-to-date discussion of the essentials of comparative philology should find a place in every normal school, and as much of it as can be readily understood be given to the pupils in every high school. Then we will not find a graduate of one of the best high schools in Massachusetts leaving its halls under the impression that English is a descendant of modern High German, or believing that *all* new words in the language *must* be derived

from Greek or Latin. The calamitous effect of such ideas upon the use of English as a tool of thought is only too apparent.

No Language a Model for Another. It is an idea born of methods of monks and pedants that the Latins and the Hellenes in laying the foundations of their own languages were intent upon improving the style of modern English. Every tongue is *sui generis* as a factor in human evolution. English in this respect is absolutely independent of Greek and Latin, whose contributions were in no way foreordained or predestined for the purpose of eking out the time of the grade-school and teaching young Americans how to read, write and speak their mother-tongue. For the ordinary boy and girl the inflections and conjugations of the classical languages are simply a millstone around the neck,—English has decreed that they be "cast as rubbish to the void," and our language should be taught as it is and not as if it were a Greek or Latin dialect. Its progress as a form of speech practically without inflection should be the important thing, not the minute dissection of the skins it has sloughed off, the organs it has reduced to innocuous desuetude. What makes English English outweighs the relics of its earlier days. Not the fossil grammar, but the living speech, is matter for education. One will write and speak his language better when his attention is given to that towards which it is moving rather than to that from which it has broken away. Some information about the bed-fellow in the next lodging-house is better than a plethora of detail about the one in the last.

Latin not the Basis of English. Latin has no more shaped the English tongue than Rome has built the Saxon heart or made the Saxon arm. English grammar is soundly Anglo-Saxon run through the sieve of a mind that never had a Latin bent. The good red blood of the vocabulary is Saxon too. After 1,500 years of subjection to Latin influence English is still English. Soldier, churchman, *littérateur*, statesman, scientist, have in succession been the advocates of Latin, but in vain. It has always been Mrs. Partington engaged in the same old attempt to turn the tide with a broom. From the unfathomable depths of the Teutonic ocean has come the mighty rush of waters overwhelming the Latin shallows and treating them to a bath of good Saxon brine. All the Latin in modern English is thus pretty well pickled. Before it went into the brine, too, every bit of Latin had the Anglo-Saxon meat-inspector's mark put on it. And a good many carcasses went to the soap-factory. The teacher of English needs to know that Latin has no skeleton-key by which to open the doors of English at will. To-day Latin can enter English speech only by the same door through which come Russian, Persian, Ameri-

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can Indian, Chinese and Malay. It is quite useless for Latin to try to steal a march while the long line is waiting, for the heart and soul of English are very democratic, and, when competitors, Latin counts for no more than Choctaw. It is the English thought, not the Latin garb, that is master of the situation. The test is service to a living tongue of the twentieth century, not homage or shelter to the wandering manes of dead vocabularies, or unquiet ghosts of languages wearying of the linguistic Hades and seeking for some real live incarnation among the thoughts of man. Latin, like every other tongue, is clay in the hands of the English potter. And he has more than one wheel to shape it upon. Spelling, pronunciation, form, meaning, etc., all these turn beneath his skillful hand. Who would recognize in *jilt* the descendant of *Juliana*, or in *cab* the offspring of *caper* ("he goat")? Why if Latin be so indispensable to modern English, has it (or Greek) not furnished substitutes for words like these: *Boycott*, *tariff*, *gong*, *caucus*, *taboo*, *totem*, *tattoo*, *cannibal*, *Tammany*, *bazaar*, *boomerang*, *hammock*, *hurricane*, *curari*, *guano*, *shampoo*, *cabal*, *mammon*, etc.? For the simple reason that the Roman and the Greek mind never saw or felt some of these things as we see and feel them, and our language is strong enough to pick and choose from the living, not borrow perforce from the dead tongues of earth. The classicists are shocked at the ease with which English *Sprachgefühl* discovers these words and at the difficulty they meet in getting their own book-made terms adopted. They forget that English has no grammar wherewith to shackle any word. No armor to protect it, no ornament to deck it out with save thought only. To English the Latin and Greek arsenal of gender, case, inflection, conjugation, etc., is a sort of Nuremburg torture-chamber representing the Dark Ages of language when pious and bigoted literary inquisitioners sought to convert all words, all languages, into some sort of orthodox Latinity. But speech no less than faith, had its Luther. What a wail went up from the classicists, who claimed to be the guardians of "pure English," when the word *sociology* was coined and successfully floated. Their loud protests against hybridism in compound terms only emphasized the fact that neither of their boasted model-languages could alone furnish the needed expression, so English, scorning the grammarian's limitations, took part from each and the new word appeared to designate a new and important branch of the science of man. The heart of English is still English. Johnsonese is dead. Macaulayesque is moribund even in our high schools where it has so long found shelter. Paragraphing may occasionally galvanize the ghost and make it walk a little, but, save where the English manufactured by teachers of English

and written by men of science whom they have taught still lags superfluous on the stage, the English born of Latin imitation is on the way to decent interment. The greatest English of any century was written by one who knew "small Latin and less Greek," and the best English of our day by some who knew still less of both. If the teacher wants to see how English English can be, let him look at this little poem by F. W. Bourdillon:

"The night has a thousand eyes,
And the day but one;
Yet the light of the bright world dies
With the dying sun.

"The mind has a thousand eyes,
And the heart but one;
Yet the light of a whole life dies
When love is done."

Not a single word of Latin or Greek origin does this poem contain, and yet it seems to be pretty good English. And if the teachers would read the English Bible more and the Sunday newspaper less they would discover plenty more good English in which the Latin and Greek words are few and far between. The teacher needs to recognize that while Latin and Greek may add to the dictionary words that are there only by the mistaken efforts of men of science, who bury in such cerements the knowledge they have so laboriously acquired, they are but the "painted show," the real drama of life goes on in English,—it is the Saxon heart of English that is given "life more abundantly." Latin and Greek are incidents or accidents, not necessities, of our mother-tongue.

Full Use should be Made of the Evolutionary Aspect of English. No language in the world illustrates so well the development of human speech in harmony with the evolution of a great individual civilization. It has more than a thousand years of documented history from King Alfred to Goldwin Smith, from Caedmon to Kipling, from the oldest Saxon to the newest American. Here we have the whole progress of a language from the inflectional wealth of the Old English to the half dozen or more endings to which this has shrunk in the speech of to-day. And the verb has gained like the noun. Modern English believes in the preposition and the small particle against the long ending and the Latin verb. On every hand it has sought correlation with the world of thought, not with the formland of the school-men. Language and literature alike are evolving to this end. Touched by Celt, Roman, Norman, and Frenchman, the spoken word and the written have progressed along paths peculiarly their own, and the giant figure of Shakespeare, no less than the speech of his people, is unique

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among men. With the Celt and the Saxon English has sounded the depth of inter-racial conflict, with Englishman and Norman it has fought the battles of democracy and aristocracy, with the Tudors it has felt the emancipation of religion; later still it was with the evolution of the modern parliamentary system, as before it was present at its birth; and in the wake of New World discovery it has builded a Greater England over-sea, and circled the globe with its commerce, while multitudes in every continent and sea make it more and more *the* living language of mankind. All this the teacher of English should know, and as much of it as he can, he ought to teach. English as an object-lesson in human evolution is better than English shackled to the grammar and the dictionary.

The Democracy of English must be Recognized. Hitherto English has been taught as if it were an aristocracy for which youth (always so democratic) needed to be prepared. The core of a language is common to its men, women, and children,—children at play, women at work, men at their ordinary tasks, these are the makers and keepers of the speech that lives. Women, the guardians of the child, were the first shapers and transmitters of language. A few words sufficed the hunter, cunningly tracking the wild beast to his lair, or stealthily seeking the scalp of his foe. Woman, over the cradle, where life, not death, was inspiring her, caught innumerable sounds from the lips of infancy, and gave them place in the *mother-tongue*, which the laconic father was only too ready to accept. Of all things it ill becomes women-teachers to Latinize English; the Saxon heart of it is theirs by an inalienable birth-right. Since the very beginnings of our language the mother and her child have been together, and English is Saxon still. Take out of English but a single series of words (all woman's own by genial labor in the past),—*sow*, *sew*, *sweep*, *spin*, *weave*, *grind*, *wind*, *wash*, *bake*, etc.,—and what a void there is! And how many of the slang terms that ultimately find lodgment in the best dictionaries were coined by the child of the street! The teacher must cease to look upon English as something to be shaped and regulated for an aristocracy of men, and come to see that it is the tool of the democracy of men, women, and children, whose title to its use is far sounder than the decree of any pedagogic college of heraldry.

King Grammar must be Dethroned. By some strange accident the democracy of English is still subject to a king, whose tottering authority the great body of teachers, unable to break away from old traditions, chivalrously uphold. And this king is no Saxon monarch, but a tyrant of the books tracing his dynasty back to the days when the Latin school-men ruled supreme. What is needed is a good, healthy declaration of

independence and the relegation to the lumber-yard of the Latin grammars and their imitations. The teacher must see that English is to be taught as English, and not as if it were a Latin dialect. He must wake up to the real meaning of the fact that only by a supreme effort is Latin now used in the city of Rome itself, while a score of cities as important as the one by Tiber's side have sprung up in all parts of the world whose common speech is the once despised English. England once supplied oysters and slaves for the Roman emperors, now she has girdled the globe with a tongue, the record of whose thoughts and dreams requires a lexicon nearly fifty times as large as that which interprets all there is left of the prose and verse of her would-be Latin masters. It is to this larger democracy of the future, and not to the limited aristocracy of the past, that the teacher should swear allegiance. When, at the Council of Constance in 1414, the Emperor Sigismund was rebuked by the Cardinal Placentius for using a neuter noun as feminine he replied, "I am King of the Romans, and above grammar." And the way in which the various Romance languages have treated the neuter nouns they borrowed from Latin showed that they too were "above grammar," and indicates what they would have done further in this matter had not the school-men interfered. Four hundred years later a president of the United States (no less a man than Jefferson) went on record in these words "Where strictness of grammar does not weaken expression it should be attended to. But where, by small grammatical negligence the energy of an idea is condensed, or a word stands for a sentence, I hold grammatical rigor in contempt." But the users of English must be prepared to go farther than the Emperor and the President. And their poets point the way. Whitman in rude and Browning in more artistic fashion are the poets of democracy whose deliberate violations of grammar ask and need no excuse. The school-men may cavil and murmur as they please, but these prophets represent the future democracy foresworn of its allegiance to king grammar and speaking free men's thoughts as free men should. With such, the language shall come to its own, and thought, not form, be master of its destinies. The teacher should remember that while poets are akin to the gods, the grammarian is least among the sons of men. The poet thinks the thought of God after Him, the grammarian shackles the thought of man with fetters he has made himself.

Poetry must not be Made into Prose. Poetry is the greatest possession of man. All language was once poetry, and most of it would be now if it were not for the petty dissections of the modern grammalogue. In spite of the ancient philosopher who wanted to exclude them from his ideal republic the poets still

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live, and the little children love them as of old. Poetry is as eternal as childhood itself. It will never die out as long as generation after generation continues to produce fathers and mothers and the never-ending chain of children links past, present and future into one. President Eliot would teach all,—religion, morals, civics,—by poetry. Men of science like President Hall are of like opinion. So, too, students of nature, like Burroughs, who hold that poetry itself is sufficient without the brand of the teacher upon it. They are right. Give the children poetry fresh from the hands of genius and of God. Let there be no tampering with it. Hands off grammarian and retoucher! Of all criminals the worst is the teacher who wants the child-like thoughts of genius transmuted into his own adult commonplaceness. Paraphrasing is a sin against the Holy Ghost. It has done more than any other single thing to kill the instinct for good English. Its very name should be anathema. We have barrels of sermons, bushels of orations, and books innumerable treating of the birth of American liberty, but who does not turn to the poet for the best word of all? And yet a teacher will set a pupil to paraphrasing this holy scripture, for such it is. Such action is utter sacrilege. A teacher who demands this is worse than any savage or barbarian. Emerson's immortal hymn ought at least to be freed from the Cossacks of the school. Over Shakespeare's grave we read:

> "Good Friend, for Jesus sake forbeare
> To digg the dust encloased heare;
> Bleste be the man that spares thes stones,
> And curst be he that moves my bones."

This of the dead body of the poet. What words shall frame the blessing and the curse for those who have to do with the living body of the poet, the part of him that can never die?

The teacher of English ought above all to know good English when he sees it, and to be wise enough to let it alone. It will sing itself into the hearts of the young without his organ of adulteration.

LIBRARY PROBLEMS.

By JOHN COTTON DANA, Librarian Public Library, Newark, N. J.

Gabriel Naude had charge of the library of Cardinal Mazarin and of the libraries of other notable people in the 17th century. When he was about 25 years of age, in 1627, he published a little volume which he called "Advice on the management of a library." This was at the beginning of his career as a book lover and librarian. Yet even at that age and before he had yet enjoyed the experience of gathering and arranging some of the most notable libraries in the Europe of that day, he approached his subject with a fullness of mind and breadth of view which are not often found among librarians. In the closing chapter of his little book he speaks of the proper purpose of a library. The acquisition, classification and general care of it he has duly described in previous chapters. "All these matters," he says, "having been settled, there remains to the completion of this discussion only a statement of what should be the library's chief end and aim. To suppose that after all the care and expense I have heretofore suggested have been given to the accumulation of many books and their proper installation, we may, as it were, hide all their lights beneath a bushel, may condemn all the brave spirits they embody to eternal silence and solitude,—this is to fail utterly to understand the purpose of a library. Of a library we may say, as Seneca says of Nature, that she 'desires not merely to be looked at, but also to be admired; that she would lose all the fruits of her labor, were she to exhibit her handiwork, so vast, so noble, so subtly complex, so bright, and so beautiful in ways so manifold, to solitude alone.' In vain would one follow the instructions I have set forth and incur the large expense I have recommended in the purchase of books and their proper establishing, if he have not in mind their consecration to public use; if it is in his heart ever to refuse access to them to the humblest who may have need of them."

These sentiments were uttered 275 years ago. They have not obtained very wide acceptance yet; because the preservative function of a library, for several hundred years so justly prominent, has persisted like an old, fixed habit, and made difficult the development of other functions which changed conditions demand.

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All people are becoming readers. The newspaper, in the past three decades, has raised the number of those in this country who make use of print for recreation and information, from two or three million to perhaps ten million. There are among us at least thirty million more persons preparing to come into the ranks of readers. And every day the newspaper gathers more and prints more of all that touches life, and sells that more for less and less, and encroaches on the domain which the book and the weekly, monthly, and quarterly magazine once held for their own. Books cost less and less each year to make; writers increase in number both relatively and absolutely; and books of all kinds, from simple restatements of trivial facts to careful announcements of prolonged research, from silly verse to masterpieces of imaginative writing, rush through the press in an endless and swelling flood. Formerly, save for oral tradition, only in rare and costly books were to be found the means of culture, and the secrets of the arts, trades and professions. Now the classics and the literature of information are to be had almost for the asking. Libraries designed to serve the needs of many decades to come prove too small before they are fairly occupied. Books overflow the shelves; readers crowd the floors.

In the great city, as well as in the small towns, donors, trustees, librarians and architects seem not to have faced these facts of modern life in the field of paper, print and readers, and build after old precedents. They accumulate books as did our fathers when the material, the paper, print and binding, of the book itself was rare and costly. They provide for the few who read forty years ago instead of for the multitudes who read to-day, and they administer as if library science were an art preservative instead of an art descriptive, selective, directive and distributive.

Much has been done, to be sure, to meet the new demands this increase of books and papers make upon us. Library methods have changed. We need go back only twenty-five years to find the original, natural and in its early days entirely just view of a library's proper character and method in general acceptance. The librarian's art was then an art preservative. Books were to be kept, kept jealously, and used carefully, and only by a selected few. Library buildings were storehouses. The space in them for books was relatively generous, that for readers or users of books relatively small. Lofty rooms with encircling galleries satisfied the demand for show. The questions of heating, lighting, ventilation and shelving were secondary and unconsidered, or not well considered. The coming tide of books and the coming hordes of readers were unforeseen, and all buildings were designed to invite and encourage a growth

they could not satisfy. Many a city, town and college in those days built for a decade or two only, when they believed they were building for generations. Things are better to-day. But few yet realize the full extent of the changes time has wrought in the world of books, and very few library buildings have been erected in full realization of what the changed conditions demand.

It is impossible to draw up general rules as to the details of library construction. The factors of funds, location, adjoining buildings and special needs, all must be given weight in each individual case. A few general principles are, however, of almost universal application.

Libraries always grow faster than their communities suppose they will. Probably nine out of ten of all the library buildings put up in this country have already proved to be too small. Books will increase in number more rapidly each succeeding year. Popular education and cheap newspapers are rapidly increasing the number of readers and of library users in every community. The first general rule, then, is, make the building as large as the funds permit. Defer decoration if need be; but get abundant floor space by all means, and provide for extensions if possible.

The public buildings in this country which are over twenty-five years old and are still fit—in location, style, construction and arrangement,—for the purposes for which they were intended are very few. Do not, then, look forward to great permanence for your library building, and do not think it necessary to make it absolutely fire-proof at the cost of size and convenience. Books can be reasonably well insured. Save in a few large collections a total loss is not a vital thing. Build substantially; but do not imagine your structure is for all time, or even for a hundred years, when twenty-five will probably find it out of date, out of place, and a burden.

A library is a place in which many people are to read every day. Give them all the light you can.

Library methods have entirely changed in the past ten years. We may be sure they will further change in the next twenty-five. What the changes will be, no one knows. The buildings adapted to the methods of ten years ago are to-day out of date. They are hindrances to development and to good work. We may be sure that buildings especially adapted to the methods of to-day will prove to be poorly adapted to the methods of 1925, and the closer we fit them to present needs by permanent construction the more out of date they will prove to be as new needs arise. Therefore, make your building adaptable to new conditions. Provide all the well-lighted floor space you can, and let it alone. Avoid permanent partitions. Do not be

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deluded into surrounding each spot on which a certain kind of work or reading is to be carried on, with a wall of brick or stone. Why should one who reads the "19th Century" be separated by a huge light- and air-excluding, distance-increasing partition from one who consults an encyclopedia, or examines a catalogue, or studies engravings? The need of partitions to keep out noise from other parts of the library is much less than most suppose. Time will try all division walls inside your library, and prove most of them wrong. Leave them out, and get better air and light; greater ease of administration at less cost; greater comfort for the public; more available floor space—two rooms each 20 feet square are not nearly as large in actual utility as is one room 20 x 40 feet,—and an elasticity, a responsiveness to future needs, which the next generation will thank you for.

With this no-partition rule goes the rule against fixtures. Complete your interior. Then add the fittings and cases as they are needed and move them, when occasion arises, as time goes on. Fixed desks, fixed rails, fixed book cases, save perhaps in a stack, are obstacles to comfortable administration. No delivery desk was ever built right the first time. If it can be easily changed this is no harm. The books outside the stack will increase in number; so will your readers. This increase will compel the shifting of cases for the former and of tables for the latter. Make all furniture in small pieces and all movable.

Put as much as possible of the floor space on one level. Stairs are bad in any library. The smaller the library the worse they are. They mean additional attendants; they add to the daily labor; they are not grateful to the public.

The essential things, then, in library construction are maximum of space, on the fewest possible floors, good light, a minimum of partitions, and no fixtures. Many libraries have been built in recent years; probably not a dozen among them conform to these conditions. This is, in part, the fault of librarians, who have not realized the future of their own calling; in part, of trustees, who have valued things they thought magnificent, "tasty," "elegant," and imposing before the needs of their constituency; in part, of architects who let convention and precedent rule in interior arrangement as well as in exterior design. The sins of the father are visited on the children in such buildings as those of Boston and Columbia, which by their very cost and prominence will strengthen the evil determinations of many an architect and board.

The old librarian was often master of his books. He knew them, every one. Each stood for years in its accustomed place and was in the librarian's mind like an ancient landmark.

But the incoming tide increased: the old librarian passed and his knowledge went with him. Careful lists were needed. As lists grew they became complex. Rules of cataloguing arose and flourished. The need for grouping on the shelves books of like nature was soon apparent. Classification became a necessity. Its complexity increased. And the classing of books and the listing of books, and the listing of parts of books and the printing of these lists, which were in fact indexes to whole libraries of books,—seemed imperative, and libraries exhausted their resources in printing catalogues which were out of date before their proofs were read, and projected card catalogues which time may prove to be bibliothecal Frankensteins.

Yet the development of this inventory-and-index idea in library management was natural and proper. It has been of great assistance in bringing libraries under control. We look forward, however, and see that we are not yet at the end of the matter. New difficulties born of the very profusion of books, promise to arise. Its many books and its expanding catalogues threaten to obscure our vision of the library itself. In twenty years, libraries of one or two million volumes will be considered as only in their infancy. Within the lifetime of some of the younger members of the profession, libraries of a few hundred thousand volumes will be as common as were those of a few tens of thousands a quarter of a century ago. The library of a million volumes will need for its indexing, under present methods, five million cards.

Without going into details, we can see how cumbrous will be a catalogue of this size, no matter how carefully it is arranged. Its form is abhorrent to many practical men who make use of books. The ignorant can't use it, the learned don't need it. It is a tedious and irritating task to finger cards. In a large catalogue the entry of the latest book, and the vast majority of those who use books want first of all the last book issued on their subject, is lost in a vast desert of useless references. Men of moderate intelligence, occasional visitors to the library, are helpless in the presence of the catalogue and turn in despair to the attendant, who often depends himself more on lists and special bibliographies than on the catalogue. The student, versed in books, hunts out his own authorities and asks of the catalogue little more than the information that the library has or has not certain volumes. He perhaps can go to it for a few of the first steps of the investigation he is about to set out upon; but having taken those first few steps, he wishes to go direct to the books themselves. In fact, few men who wish to consult books on a certain topic care for more than guidance to the books. No card catalogue can give

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them the information they need. They wish the books themselves; the foot notes and indexes in the books themselves. They go from point to point in their own way, each consulting his own particular needs. The catalogue for them is hardly more than a starting point. It is not much more than a means of laying hands on a certain book when once they have learned that that certain book is the one they wish to see. The specialist finds more helpful than the catalogue a few minutes conversation with some one connected with the library and posted on the literature of the subject he is about to investigate. Such a person in a general way outlines the range of the library's resources, and puts him in touch with the subject if he is not so already, and indicates the location of the books he may wish to consult. Each year, as the output of books grows larger and as they become cheaper, the number each library can and must buy will increase and the annual additions to the cards in the catalogue will become greater in number. This will add to the expense. If the Library of Congress succeeds in its admirable plan of printing correct cards, purchasable at a small price by all libraries, this will reduce the original cost of the catalogue; but it will induce many libraries to add rapidly to their number of cards and so will add to the cost of their storage and arrangement. The labor of sorting a thousand new cards into their proper places among a million others is immense. This labor increases for every library each year and will become for many small libraries a burden larger than they now anticipate.

Nor is this all. Not only is the catalogue becoming an alarmingly expensive creation; not only is it growing more cumbersome to the user; not only does it contain each year a greater and greater amount of chaff,—its cards referring to th dead books,—relatively to the few grains of wheat,—its cards referring to the live books—; but also it becomes as it grows an institution more and more difficult to revise. In most cases it must in time be revised. Librarians in hundreds of towns and smaller cities—and I believe in most large cities also—will soon find their shelf-space full. They will keep on buying books, more in number each year. They must make room for them. They will pronounce judgment on many of the older volumes and say that for their library those books are dead. They will give them away, sell them or burn them. But the dead books are entered in the catalogue, on the shelf-list and in the accession books. And the labor of removing from the catalogue and its allied lists all traces of the books pronounced dead and sent away is prodigious. Yet it must be carried through. I am not attemptiog to solve the problem I am presenting. I venture only to sound a warning.

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President Eliot, of Harvard, says it is time for libraries to begin to discriminate between the living and the dead among books. He asks for new methods of treatment. It is well that one who speaks with authority says what many have been saying for several years. It is not too soon to attack this problem now, while there is still time to give it due consideration.

Add to President Eliot's appeal for a change from the hoarding process to the method of elimination the bold statement by President Harper of Chicago University as to the place the library is to occupy in the educational institutions of the future—and his prophecies apply with equal force to the public library and its special community—and you have ample justification for the distinction already made in this paper between the former function of libraries—the preservation of books—and its latter day functions, of evaluation, selection, direction and distribution.

President Harper says: "The library and the laboratory have already practically revolutionized the methods of higher education. In the really modern institution, the chief building is the library. . . . . The librarian is one of the most learned members of the faculty; in many instances, certainly the most influential. . . . . The library, fifty years ago almost unknown, to-day already the center of the institution's intellectual activity, half a century hence with its sister, the laboratory, almost equally unknown fifty years ago, will have absorbed all else, and will have become the institution itself."

Public as well as university libraries, as they develop into the influential institutions which President Harper says they are to become, will change much from what they now are. Just what are the changes they will undergo, it is impossible to prophesy. They have been indicated, we may reasonably suppose, by the changes they have undergone in the past few years. Their buildings, as already suggested, will become simpler, better adapted to economical administration, more easily modified to suit new needs, and more readily enlarged for increasing use.

Cataloguing methods will be simplified and cheapened. Some way must be discovered of making at least an author index which can be more easily kept up to date, more easily and more quickly used, and more readily changed by the dropping of entries of books past their usefulness. It is probable that we shall be able to return to printed broadsides for this special purpose, though the card catalogue in its present form may not go out of use for the index of authors, titles and subjects.

Smaller libraries will confine themselves to keeping up small working collections, chiefly of the more recent books, constantly relieved of the burden of dead books, and carefully

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indexed. Historical material will be confined in them to the best books on the subject at large and to a very small portion of the local field. The *omnium gatherum* historical method now advocated for the libraries of small communities and practiced by many of them, will have to be abandoned. Material will, by this method, soon accumulate beyond all possible control, and, being uncontrolled, will be of no use. Historical libraries will have to struggle with this problem of over-much material. Somehow the selective process even here must be put in operation. The libraries of a few great cities can, and probably will, go on accumulating at large for some years to come. It is well that they should. A wise winnowing process can here be discovered only by much practice on large masses of material. But before long they too will find that a book is not a book if there is nothing useful in it; and that it is better to have the best well in hand, than a mixed mass of live and dead, unorganized, material

As President Eliot has said, the problem of housing and indexing is already a serious one at Harvard. It is not less serious in other large libraries, although the fact is not often admitted.

The plan suggested at Cambridge and Boston is one of the possible solutions of this problem of storage. This is, to erect in some place outside the city, where land is not valuable, an enormous warehouse, fireproof, simple, inexpensive, capable of indefinite extension; and to consign to it the dead volumes from all the great libraries of the region. A difficulty here arises which has already been mentioned, that of so treating the catalogues of each library contributing to this warehouse that they will show that the books removed are no longer in the library proper, but in the warehouse. This difficulty is one which, under present methods, will grow greater with each succeeding year, as the catalogues of each library increase in size and complexity. Another problem is, how to arrange the books in the warehouse so that any given volume can be found after it has been learned from the catalogues in any of the contributing libraries, that it is actually "in storage." If the coming flood is as great as it promises to be, and if ways of making, handling, storing, revising and consulting card or other catalogues, much less expensive of time, space and material than those now in use are not found, it will perhaps be necessary to cast aside all records of the books which have been pronounced dead and relegated to the storage warehouse, and treat those thus stored in the simplest possible manner,—which is, to arrange them in one alphabetical series by authors. This method would discover duplicates; could be carried out by inexpensive labor; and yet would

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leave the books accessible to the occasional inquirer with little loss of time. The libraries proper, the efficient institutions of President Eliot's desire and President Harper's prophecy, would find themselves relieved of a tremendous burden by adopting this selective process. They could soon become far more helpful to the ordinary student than they can hope to become as long as they are struggling under the weight of books rarely used and of unwieldy catalogues.

The method of administration of the active, up-to-date, clean-cut working library of the future is still somewhat in question.

This working library of the future, so far as we can foretell its character, is in a building which is well-lighted and can be easily readjusted, rearranged and extended to meet new conditions. Space for readers as well as books is ample. Its stack or storeroom is planned to hold the least used books. It keeps its main working collection together, not scattering it in branches in public libraries, or in department buildings in university libraries. Branch or departmental libraries will duplicate or supplement the main library, not divide it. It is a working library, not a museum of antiquities, curios or art, and it does not invite the sight-seer. It is kept up to date, as well by weeding out of volumes past their usefulness as by the purchase of the latest publications. The most used books are most easily accessible and most fully catalogued. The latest reference lists and bibliographies on all subjects which the collection covers, are provided. Titles for purchase are selected with great care; utility, and immediate utility, being considered first, rarity, beauty and prospective value last. Rules and regulations are few and flexible. That the books be used is considered of the first importance. Museum pieces of whatever kind are not admitted to the library proper, have no place in it, and hence give no occasion for close guardianship of the shelves.

Card indexes to the proceedings of societies, to scientific journals and other publications are now being made and published. One which covers the field of zoology, published in Zürich, Switzerland, already contains over 60,000 cards. These indexes are expensive. To their first cost has to be added the cost of keeping and of the addition of new titles as they are received. In the future few libraries will find it possible to buy and keep up more than a careful selection of such lists, only those adopted to their own peculiar needs. The burden they will become in a few years will be clearly recognized. Also, the ease with which the knowledge they can impart can be transmitted from one library to another will be more fully appreciated. In this matter, as in book-buying and book-weeding, co-operation between libraries by inter-library loans will make it easier for each

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community to see the advantages of specialization, and of small collections kept well in hand.

The free public library of to-day does not occupy the field of book-lending as completely as it supposed it did, even a few months ago. The Book-lovers' Library has demonstrated that many people in every community will borrow books of certain classes, even at some personal expense, if the opportunity is favorable. The free public library evidently has not been offering the favorable opportunity. It is very doubtful if it ever can, or should. It will, in the future, concern itself less than ever with the circulation of light fiction. It will find it can use all the funds it can obtain in the promotion of reading of a more serious character, and in other work proper to it. It will reach out for the mechanic and the artisan—it has never yet had a hold on them,—and will occupy itself more and more with the work of helping parents and teachers to train the young into the habit of reading good books, and into a working knowledge of books and journals of the informing kind.

By co-operative effort, among libraries, as illustrated by the work Mr. Geo. Iles is doing and has done, most books as soon as published, will be evaluated at the hands of experts. The critical and expository notes thus obtained will be made generally available. Less weight will be given to the completeness of bibliographies and more to their annotations, and the skill they show in selection. Save for the maker of bibliographies, who has completeness for his only aim, a complete unannotated bibliography is of very little use.

In book selecting, in narrowing his library's field, in the casting out of dead stock, all with the help of expert advice, the librarian must be arbitrary. But in the use of the books by the public in a public library, by the students in a college library,—here he will remove all barriers. The simplest and most flexible rules, based on the facts that the public owns its own institutions, and that most men are honest and considerate of one another, will enable him to see that all claims are treated alike. Suggestions, criticisms, advice, demands, will be invited from all. Public officers are public servants, and public institutions are supported to satisfy the public's needs,—these good old maxims will be kept always in mind.

Librarians have passed through the repository stage, when they did little more than collect and save; the identification stage, when they devoted themselves greatly to classifying, ticketing and cataloguing their books; the memorial stage—which we are unhappily still blundering through—when they surrendered themselves to the task of erecting Greek temples, Italian palaces and composite tombs; the distribution stage, wherein they find themselves outstripped by commercial ven-

tures which saw that the novel had become as much desired as the daily paper; and they are just entering upon the critical, evaluating and educating stage. They are just beginning to find themselves, as President Harper's words testify. In this present stage they discover that they are, or may become, the center of many of the forces in their respective communities which make for social efficiency and civic improvement. The modern public library is the helpful friend of scientific, art, and historical societies; of the educational labor organizations; of city improvement organizations; of teachers' clubs and parents' societies and woman's clubs. At the library should be the books and journals to which all these institutions must come for their guidance or material. Here should be rooms suitable for their gatherings. Here should be a spirit hospitable to them all; knowing what is in books, but keenly alive also to all that is best, all that is striving for helpful expression, in the people who own those books and hope much from them.

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NORMAL SCHOOLS, ESPECIALLY IN MASSACHUSETTS.[1]

By G. Stanley Hall.

From Commissioner Harris's last report we learn that in 172 public normal schools of the country, but 26 % of the pupils are male; while in the 134 private normal schools, 53 % are male, but private schools are diminishing, and in both, the progressive feminization is marked. From Secretary Hill's report, just issued, we learn that in the twelve normal schools of this State there are 42 male and 79 female teachers, and 127 male and 1,642 female pupils, a proportion less than the 10% male teachers in the State, and that in the last year reported only 7.18% of the graduates of these schools were males and 92.82% were females. The males are thus a vanishing and already almost negligible quantity, a fact that must be borne in mind throughout. We also find that, while in the nine years ending in 1901 the per cent. of normal graduates teaching in the State has risen from 37% to 45%, some of the Western States, according to Superintendent Jones, have already over 50% of normal trained teachers.

The first need of the Massachusetts normal schools is, in my judgment, inspection. It is a cardinal axiom of public as of private charity that grants should not be made without some efficient agency to follow them up, to see and show the public, which gives, that the best results are attained. In England educational grants are conditioned upon thorough-going tests. This, the normal schools in this State lack. Each, as is well known, is practically under the control of two members of the State Board of Education. In their reports, we are told of one that the faculty "constitute an enthusiastic, well trained and equipped teaching force under able leadership." "The work of the past year merits approval." We are told that another school "stands for the incitement of its members to true living, for the inspiration of its students with the spirit of the true teacher," and for other noble ideals. Another "stands for harmonious development." In another there is only "continued harmony, prosperity and efficiency." Another in all its

[1] Address before the N. E. Association of Normal School Teachers, Boston, May 23, 1902.

purposes and plans "is entirely satisfactory," etc. The committee as a whole states that "so far as general legislation to determine the scope and ideals of public education is concerned, there is little left for Massachusetts to do; the grander outlines of its policy are well settled." There are statements of wants and needs for material enlargement, but no word of criticism and no attempt, either by the board or its normal committees, of any independent suggestion. In a word, the State Report, —this part of it,—is much like that sometimes made by the trustees of private colleges who are all graduates of it, jealous for its glory and with neither time nor disposition for criticism.

Now I believe that the best normal principals and teachers in this State would welcome real inspection and could afford to do so, though it involved some of the faithful wounds of a friend. I believe that in this respect, as in others, they would like to be really public and not private institutions, and I am certain that they would benefit thereby. The State universities of the West are often severely and publicly arraigned by members of their Board of Regents. Many public and private colleges appoint outside Boards of Visitors, who attend recitations and submit printed reports. High schools have been greatly stimulated and developed by college inspection, and all the strong influences that, since the report of the Committee of Ten, they have felt from the college, which for a decade has been so active in suggesting methods and even dominating the work of fitting, an agency that I believe has now finished its work for good for the present in this region.

If we turn to the reports, catalogues, or other statements issued by the normal schools themselves, we find both in this State and in the country an immense difference with regard to information given to the public. A few print annual statements of sometimes nearly two hundred pages, explaining the purpose, describing the course and methods in detail for each class, with the text and reference books used, and the standpoint from which the work is done is explicitly defined. In others the statements are of the vaguest, briefest, and most platitudinous character, with not a single text-book named and as few details as possible, as if with a secretiveness suggesting timidity lest a dashing critic like Burk should arouse a new shudder.[1] I have sought in vain to find how many of the teachers in our State normal schools are graduates of colleges; how many are Masters of Arts or hold the Ph. D. degree, and I doubt if the Board of Education is strong enough to make this inquiry and publish

[1] See his two articles entitled: "The Training of Teachers," "The Old View of Childhood and the New," *Atlantic Monthly*, Oct., 1897, Vol. LXXX, pp. 547-561; and Normal Schools and the Training of Teachers, *Atlantic Monthly*, June, 1898, Vol. LXXXI, pp. 769-779.

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the results, as college catalogues now often print the academic career of each professor. All this is done with normal schools in other lands. The educational statistics of the attainments of teachers of normal school faculties are fundamental for any intelligent discussion of the theme assigned me. Massachusetts has a few men who could inspect the inside work, methods and matter, and not merely the building, statistics and outer mechanism of each school, if they were given the right to ask questions and receive answers. I believe such inspection would show in our normal schools greater defects and also greater excellencies than are generally known. Indeed, my own impression is that we have, in this State, some of the very best men and women, methods and work, to be found in the training of teachers anywhere, and also some of the very worst.

I hold that some study of the human mind and soul is as essential for the training of teachers as acquaintance with wood and iron is for engineers; soils and natural fruit, flowers and trees for the student of agriculture; or a knowledge of ores for the miner, etc., and this is the general concensus of all educators I know in the world save two, and they have in mind a very special type of philosophy or psychology which I entirely agree that the teacher is better off without. First, I would exclude, save by way of incidental reference, nearly every definition or classification of human powers, and I would not teach what catalogues sometimes specify as "fundamental principles," "theory of mind," "the form and limits of education," "complete analysis of the art of teaching," "the philosophy of education," "the problem of freeedom vs. necessity," "the nature of reality," "the relation of the soul to the body," "ultimate ethical theories," "metaphysical speculation," "materialism vs. idealism," "outlines of human knowledge," "the classification, correlation and co-ordination of the sciences," which even Comte and Spencer have not satisfactorily solved and which is constantly shifting and modified by every new discovery, *e. g.*, in the relations between physics, chemistry, astronomy, geology and biology. I would have little study of the brain unless it is well done by one who treats it with some degree of mastery; no history of philosophy save what is incidental to the history of education; little laboratory psychology save tests for defects of the senses, for motor powers, etc.; a little, but not too much anthropometry; very little logic—inductive or deductive. Some of these things might have a small place in the training of secondary teachers, but not of those for grammar grades.

Psychology is too vast a field for any one man or even university department to master now. Nevertheless, a certain

portion of it is the key to the teacher's work, and more than anything else tends to make it professional, so that in the language of a vigorous Western normal catalogue, psychology is the Blackstone of education. What should it be for the normal school? I reply, first of all, it should base on hygiene with something of air, light, heat, posture, and nutrition, as related to buildings, rooms, length and method of teaching; each pupil should learn how to detect abnormalities and defects here, and there should be apparatns to this end, and perhaps health books kept, as in some parts of Germany, for each pupil. The kindergarten should by all means be included and Froebel's letter should not kill his spirit. The child at this age needs not a metaphysician either in a state of muddle or clairvoyance about symbolism, and the universal nature and laws of mind, but the teacher should be a nurse first of all competent to be the defender and protector of the health of the child's mind and body. This is no degradation, for the training schools for nurses in this country to-day require far higher conditions for entrance, longer term, and more copious instruction, than do kindergarten training schools. Then there should be something of muscles, which are the organs of the will; the forms of motor education and the psychology of play. Habits—good and bad,—their mechanism and place of drill, is a rich and fundamental chapter. Closely connected with this comes memory, the psychology of which is practical for every day and hour of school work. Imitation, which a recent writer thinks the most comprehensive view point for surveying the whole field of soul-life; association, which for generations was almost the only philosophy the English had; attention, so closely related to the will, if not identical with one form of it; the imagination, the organ of all that is absent in time and place and of all the future and the past as well; and perhaps most of all important for the teachers of young children, the psychology of the feelings, beginning with pleasure and pain so related to hunger and nutrition, passing on to fear, remembering that Aristotle defined all education as learning to fear aright, to love, to rightly place which is the burden of the New Testament, anger, pity, sympathy, and finally interest, in a way which Herbart's abstract schematization knows not of; perhaps something of the teaching instinct, which is only an enlargement of the parental:—these are the heart of our new psychology, which in its wider range includes the whole of philosophy. They are its keys; are closest akin to the tact, taste and common sense in which psychology has its roots. These are more easily taught perhaps to girls than to boys, because the former are less specialized and more generic, nearer the race, richer in intuitions, and by nature,

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if unspoiled by abstractions, far nearer the life of the child. All this matter, too, should be taught concretely, objectively, by a natural history method, with abundant cases, and with very little that is formal, with little schematization or definition. Much of it lies so near the normal soul that once taught by the easy way of hints, it is never forgotten; and personally, I should add a chapter on heredity and its evolutionary aspects. This kind of psychology is already, I infer, more or less developed at Worcester, Fitchburg and Westfield, and perhaps elsewhere in this State. It is full of promise for the future, not only for normal, but for academic work, and there is no part of psychology where the results of the latest research are more easily intelligible to the novice or more immediately practical in the school room. France, *e. g.*, which has the best and most comprehensive system of agricultural education according to its Minister's last report, was decades in learning that it need not teach systematic chemistry and biology to intending farmers, but must select from these vast sciences—basal for so many other things—just those elements immediately connected with soils, fertilizers, crops, domestic animals and their diseases and parasites, that were most closely related to farm industries. We should imitate this wisdom in teaching philosophical subjects in the normal school. We should neither turn out the child with the bath and teach none of it, like one of the State normal schools in Pennsylvania, nor hover in vagueness and uncertainty like Salem and Framingham, or linger in antiquity like Bridgewater. First and chiefly, we should remember that we are not teaching the psychology of the adult mind, which at its best works logically, but the genetic philosophy of the young and growing mind, where perception, intuition and spontaneity are at their very best and the powers of introspection are weakest. This teaches us due respect for the child to whom, as the old proverb has it, the maximum of reverence is due. It teaches us to discriminate between the wide range of individual differences and capacities from subnormal and defective to budding talent, and thus will tend to make the school, as it always should be, a life and career saving station.

Pedagogy or the doctrine of education is chiefly applied psychology, and without the latter lacks basis; but it includes various accessories, such as government, discipline and school law, on which little time need be spent. Organization, too, should be chiefly illustrated in a model school and never raised to the dignity of a course, because it can so readily be condensed. The mapping out of school curricula is a theme of profound importance, but should not have very great space or time

given it; still less should the vast problem of the organization of sciences, the relations between which—*e. g.*, between biology, physics and chemistry; between physics and astronomy—are constantly changing. The connections between history and literature, between geography and history, need not be dwelt upon to any bright youth; while educational values—a theme very tempting to platitudinarians—are elements yet very indeterminable to the expert. I have looked over many textbooks on these subjects, but, though some are pretentious and elaborate, form enormously outweighs content.

To my mind the greatest practical errors with which normal schools can be charged, at least in the past and I fear to some extent in the present, are designated by the word, methods. This work often means dissection of the large living wholes, which children love, into elements which they abhor. It involves over precision, premature accuracy, verbal definition, logic chopping, formal steps, and eternal analysis and over explanation. Said a bright child, "I am sure I could understand this if you only would not explain it." A bore is one who expatiates at tedious length upon what you either know already, or if given the right handle, could apprehend in an instant. It often slows down the rapid impetuosity with which the mind storms its way to the center of things. The chief evils of excessive method maceration are—first, it mortifies and blunts the natural rapid intuitions—the best things in the mind. It drags thought, that ought to fly, down and makes it crawl on the ground. It often involves ignorance of the best that is in childhood and, therefore, robs it of much of its attractiveness. It tends to force the brief moment of genius, which almost every child has in some field, to a slow senescent pace. Secondly and perhaps worst of all, excessive analysis tends toward a pedantry of method which shields ignorance from its natural consequences; makes it complacent and self conscious; and gives a satisfaction that tends to arrest of growth in the teacher, because it whips up his modicum of knowledge to deceptive proportions, like the mediæval barber's apprentice, who was dubbed a master workman when he could make two ounces of soap into two barrels of lather. The over normalized teacher is always prone to have a scholarship or real knowledge inversely as his methods of teaching, because by demanding a predetermined way of work he exhausts the pupil, so that, as Plato said, there is only a wind birth and no true parturition of soul. Form should be always subordinated to substance instead of being exalted above it, and we grownups have almost lost all knowledge of the enormous receptivity and assimilative power of children when they can follow their ap-

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petites and satisfy their curiosity in their own way instead of in our way. The weary morselizations of pedagogical rudiments, the arid wastes of short steps, easy methods and logical sequences, represent too often the second childhood of senility in knowledge than the golden dawn of childhood with its power of divination that we have lost.

Next to psychology, the heart of professional normal teaching, I believe, should be the history of education. This, rightly taught, gives professional spirit, high ideals and devotion to this perhaps most philanthropic of all the pursuits of man; but not only that, but it has a culture value in itself, for all which I believe unexcelled if not unequalled. There is a sense in which the history of the world is the history of its great teachers, religious as well as secular. The soul of the normal teacher should be inspired by the great heroes, whose names are landmarks, from Plato down. This history is indeed philosophy teaching by example; these men are often the very best expression of the aspirations of their age. These things enter and live again in the soul of the young teacher. I have heard several normal principals in Germany teach this subject in a way which I wish I could illustrate, and will try. Somewhat as follows was the way an eminent normal principal in Berlin, whom I have often heard, would have introduced his class to the study first of Pestalozzi and then to Fichte.

"One hundred years ago a remarkable story appeared in Europe. It was prolix after the fashion of that day and is now rarely read. Yet its characters and action were as real and as new in fiction as Kipling's best, while the author's passion for moral and social reforms was as all controlling as Tolstoi's. It was a tale of homely life in a Swiss village, of peasants who beat their wives, and of dirty children who stole potatoes, and only on gala days had the cream left on their milk. The good preacher was growing duller, the doctor more quackish, the schoolmaster more mechanical. The squire, who also kept the beer house, was getting every one in his debt and extracting and using for his own wretched ends all domestic secrets. There was the gossip, the hypocrite, the liar, the fool, the sot, and everywhere increasing superstition, scandal, intrigue and vice.

"But there was one good woman in this dismal hamlet, Gertrude, the mason's wife, who taught her children cleanliness, courtesy, maxims, hymns, prayers and simple industries with such devotion and success that the neighbors begged that their children might come too, and soon began to come to see for them-

selves. An old nobleman visited her home-school and found a real vocation in starting a school himself. The pastor grew interested, and realized that his sermons had been dry, and began to preach in earnest. The spirit of home life and mutual improvement appeared. The beer house ceased to be the center of the village life. A few citizens met weekly to discuss the larger educational questions of public and private weal. At length a Royal Commission was sent to study Bonal, which had become the thriftiest village in the realm, and reported that they had discovered here the true principle of reform, prosperity and universal government in education, with Gertrude's school at the root of all.

"For Bonal is the world. All its degradations are but the natural offspring of ignorance, and Gertrude is the good teacher by whom alone society, State and church can be regenerated. This tale of Pestalozzi's shows us what a simple and unlearned man can do if he is in earnest, and if his cause is great. It was read everywhere; it was wept over; royal personages came to see the author, and gave him presents and decorations, and many greater men than he have since lit their torches at the fire he kindled."

Sixteen years later, in 1806, the power of Prussia was shattered at a blow by the battle of Jena. Its army was swept away; its allies, industries and trade gone. The country was impoverished and exhausted and its capital garrisoned by French soldiers. Its soil had never been fertile nor its spirit practical. Its military situation, with strong nations on all sides, was the worst in history and its record had shown more discord than unity. The race had never felt such humiliation and the future had never seemed so dark. But the German stock was still vigorous and on every hand the cause of this unexpected collapse was explained. Scharnhorst began to plan a comprehensive reorganization of the military system on its present basis. Stein set about reconstructing the land laws and the status of the peasants. Jahn founded everywhere his patriotic *Turner* societies and preached again the gospel of ancient Greece, that only strong muscles can make men great and nations free. But the key-word which guided and unified all was spoken by Fichte in his so-called "addresses to the German nations," which were given in Berlin every Sunday evening for an entire winter to large audiences of the best classes, with Napoleon's sentries at the door, and his spies scattered through the hall. He said in substance this:—

We have yet left us German bodies, large, strong and healthy to the core, a marvellous language all our own and not agglomerate of many tongues like English, and a pure

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blood never mixed with other races. We have wrought out the Reformation, the greatest task the human spirit has yet achieved, and our ancestors call to us not to let the work they died in doing be in vain. We carry the light and the hope of the world. If we sink, freedom and humanity sink with us. There is one plain and only way for patriotic recreation. It is not primarily by armies or legislation, but we must rise like Bonal by the slow and sure processes of national education. We must live for our own children, training their bodies and minds as was never done in the world before. Schools have been the one product in which the German spirit has already excelled. We have set the human spirit free, have preached, taught, lived, and believed in ideas and ideals. We must make education our supreme task; our duty of duties. We must realize the platonic republic where the wisest ruled and education was the chief problem of statesmanship. This policy must be our destiny. Our leaders must be priests of Truth and in her pay. They must think fearlessly in all directions; must investigate and discuss, do and suffer all in the world's great holy cause of science and learning. To this end he invoked all ranks and classes. For thus not only the united Fatherland, long hoped for, long delayed could become real, but men of a higher type and order of existence than had yet appeared would be developed.

Thus Fichte, idealist and enthusiast, spoke and was heard as no man had spoken or been heard since Luther. For him education was the one divine cause in the world; a new dispensation of religion itself. In accordance with his conceptions, but by far more practical men than he, the University of Berlin was founded and a national policy was defined making education the test of all. Along these lines the Fatherland has become the most effectively governed State, and its army the strongest since ancient Rome. Just as the Reformation slowly pervaded other lands so Germany has set the educational fashions for most nations of continental Europe, not to speak of Japan and South America. Her methods and ideas have been especially transforming since the war of 1870 made manifest the strength this policy had developed in half a century. Her conquests are now spreading to the world of industry and trade, and France has shown her true greatness by wise imitation of her conqueror.—*Germany is Bonal 'writ large.'* ''[1]

Something like this, I fancy, would have been the "method" of this Principal of the Berlin Training School, and then there would be discussions, details, references, reproductions, and

[1] See *Ped. Sem.*, Vol. I, No. 1, pp. 1, 2.

so through the whole year for a year of five hours a week. These young teachers went out full of their mission. They were potentialized to do their best and worthiest, and feeling that their cause indeed was the chief one in the world.

I suppose there is now an almost universal agreement that at the heart of every institution for the training of teachers, there should be a model school, and that the time has gone when young teachers learn their trade by practicing on each other, but I believe that the best also agree in feeling that nearly all present plans are more or less tentative and provisional, and that the solution is much further on. I think the best see, too, that a model or ideal school can never be to any great extent a practice school, but that the conceptions of the two are more or less incommensurate if not opposed. As it has for many years been the dream of my life to organize one such school—a dream I fear never to be realized—I will venture at this point to break a little from present conditions and suggest an ideal.

Beginning with ideal grounds and buildings—patterns of cheapness as well as of hygiene and convenience combined from the best I have ever seen or heard of—I will start with the kindergarten building, which must be spacious, mostly on one floor, with ample sheds and far ampler grounds and gardens, and with the best personnel that could be had; devoting two or three years to this alone; trying at the end of this period to make it a Mecca, where can be demonstrated in detail something better than yet exists anywhere, because its parts had been mosaiced together from the best that could be gathered from many places. Then I would proceed in like manner with a primary school for the next three years to eight or nine, and when this was done I would admit visitors and guests for observation and would have teachers enough, so that each would have time for a session or two daily in answering questions, explaining to pupils, for a brief course of perhaps three months, then six, then nine, all that was actually done and why, its meaning, etc. These classes would be the germ of my normal school. Because better and more expensive, the children would pay fees. Thus the training department should grow out of the model school, and not *vice versa*. The summer vacation should be short, not only for the benefit of the children, but for the convenience of teachers, and perhaps a brief summer school might be developed. It is sometimes said that the pattern school should be the test of the normal, should grade it, and by which it should stand or fall. I will go further with the last. My school should be too good for novices to practice in. In many places, perhaps I would

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stop here, and at any rate if the plan were copied and I were Plato's wise tyrant, I would stop here and do nothing with higher grades but train teachers for these alone. Probably when this was done, however, I would slowly develop the grammer school building and then classes, perhaps a grade a year, and open all to inspection with guides and demonstrations. Every teacher here should be more or less specialized. In this respect I would try to imitate the German gymnasia, which permit only university graduates to teach boys from eight to nine on. About this, as the cloister and cathedral schools grew up about the great mediæval churches; as some of the best modern churches are now developing about social settlements; and as the best equipped trade schools are under the wing of the great industries, so my grammar normal school should develop about these grades of my Utopian school, and most of their training should be by the grade teachers in superfluous hours, which the corps should be numerous enough to have. But, here I would stop and not trespass upon high school grades. The other schools of town should serve as practice schools, where these normal pupils should serve their apprenticeship, somewhat after Principal Russell's plan, including, if possible, a little work in hospitals and with defectives and perhaps, if most were likely to serve in country regions, I would try to develop an ungraded model school. Some of them might teach in night schools, but all with not too much preparation beforehand and not too much consciousness of the presence of the critic teacher. I would have them practice every year and every week and rise, either up the grades beginning with the lowest, or grow in independence from helpers to control of a room, or possibly in some places up the social classes, according to their teaching ability, scholarship, etc. But in place of much criticism I would enlarge the time of observation in all the grades of the model school, for women are more intuitive as well as more imitative than men, and more in danger of being either spoiled or introverted by too much self consciousness about their work. At any rate, this schemelet may serve to emphasize my own belief that a practice school is radically and essentially different from a model school, while experimental schools or stations—a feature which is so prominent in Professor Dewey's school—I think I would confine for the most part to a supervision where the university expert could also have a voice.

Lastly, leaving the ideal, I believe that the aspirations of independent and isolated normal schools to train high school teachers should be generally checked. It seems to me abnormal and wasteful that normal schools, like Albany, Bridgewater,

Ypsilanti, Philadelphia, Colorado and others, should be allowed to be in any sense rivals of the university or college. That they desire to do so seems to me rather an abandonment of their chief function, when we reflect that the younger the age of the pupil the greater attention needs to be paid to adapting knowledge to them; hence the most and best truly normal work must always serve the lower grades. The experience of other countries, notably the College of Preceptors in London and the Pädagogium in Vienna, shows that secondary education especially needs college or university atmosphere. Several of the larger normal schools in this country are no doubt, in these days of educational federation and combination, soon to join universities. Even Colonel Parker's institution at Chicago for the lower grades, not to speak of the Teachers College in New York, show this tendency. Everywhere within the last few years special schools of medicine, law, theology, and technology are being organized or affiliated and sometimes moved to universities. Fitchburg has sought to bring the mountain to Mahomet, and the Principal says of his admirable course of university lectures, that "nothing pays better." Moreover, the colleges and universities need it, so that the need is mutual.

The late president F. A. Walker, urged in an able paper that the study of education should be the central *all* in woman's colleges, and the subjects immediately connected with it should be the only higher education of women, even for those not destined to teach, both from its supreme culture value in itself and for its practical worth for life. What do we find in the woman's colleges? Radcliffe has courses in education, although it would appear it knows no school hygiene or any child psychology; Mt. Holyoke offers two hours a week of wholesome work; Wellesley has had an assistant professor; Vassar gives the same number of hours—three a week—through the year to the history and theory of education, and each professor gives one or more lectures on the educational aspect of his or her own department; even Bryn Mawr now allows an associate professor of psychology to also teach pedagogy; Smith alone of all the woman's colleges, where nearly one-half of all her graduates teach, still maintains the old attitude and will have none of it. If the university and college have hitherto failed of their duty in this respect, they are in general now thoroughly aroused to it, and are beginning to feel not only the dignity of the profession of teaching, but the culture value of knowing something of it for those who are to be parents and citizens.

The fact is that most who attend normal schools, especially those who desire high school positions, need more and better teaching in the fundamentals than can now be given. Biology, physics, chemistry, mathematics, history, literature, geology,

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Latin;—these at least should be taught for such pupils by an expert with the equivalent of a university doctorate. If we were to have committees upon these subjects, composed of normal school teachers and of college experts, sad deficiency would be revealed. These topics for high school teachers need to be taught from a purely scientific standpoint with all the resources of university expert knowledge, and in their logical order for themselves alone, quite apart from any reference to teaching. It is in part for want of this, as I believe, that many normal schools, especially in the West, have made up in intention what they lack in extension, and have little astronomical observatories, departments in stenography, taxidermy, domestic science and economy. Colleges have interest in, as well as competency for, the preparation of high school teachers and I doubt if a single irrelated normal school in the country can do this properly.

Every normal school should have a small and a few central ones, or perhaps the State would have a pedagogical museum. I do not know what became of the plans to develop one at the Massachusetts State House. Russia has a large central one in its fortieth year, where conferences, lectures and expositions of toys and games are held; demonstrations of all kinds of hygienic and illustrative apparatus; publishes memoirs; makes special researches; while France has a museum with a room each set apart for geography, natural history, physics, chemistry, model school laboratories, desks, in all thirty rooms with a library of $50,000 titles, building plans, ideal tables for science. Its publications make it a center of information; its collections comprise foods, flora and fauna and maps, and it has many thousand lantern slides in circulation on all kinds of topics, with many branches in the provinces. Some schools in Europe make a point of collecting exhaustively plants, birds, animals, rocks, soils, trees, etc., and some have curious and suggestive alcoves or rooms set apart for things that children have made spontaneously.

SOME CRITICISMS OF HIGH SCHOOL PHYSICS, AND OF MANUAL TRAINING AND MECHANIC ARTS HIGH SCHOOLS, WITH SUGGESTED CORRELATIONS.[1]

By G. Stanley Hall.

Of all the sciences that deal with the physical universe, physics, I suppose, may now be called central. In antiquity it was *the* science of nature from which many branches have sprung. It conditions, perhaps, man's most fundamental views about the world in which he lives. In all the history of science its chapter is perhaps the most imposing, its present growth perhaps most astounding, its applications and utilities most fruitful, its promise for the future brightest, and its disciplinary value unexcelled. Its pedagogic history, too, under various names is some two centuries old. As natural philosophy it has been for nearly three generations the chief, quite commonly the only, science taught in the high schools in the old New England academies and seminaries. Despite its marvellous growth as a science it seems now from some points of view well along in the stages of educational decadence. In this country at large from the year 1893-'94, after the publication of the Report of the Committee of Ten so strongly commending it when 25.29% of all the secondary pupils in our public high schools were studying it, it has declined every year until in the last Commissioner's Report only 19.04% of secondary students in the public and 17.59% of those in the private high schools study it at all, and much more than half of these (as 56 to 42) were girls; and probably less than 7.8% of all the boy pupils in our high schools are now studying physics. This progressive neglect or aversion to physics is, despite the best fostering care of colleges, its high place among entrance requirements, the great ability with which it has been taught in the high schools, and the splendid new text and reference books the titles and characteristics of which are published in the valuable list drawn up by your Committee. Everything that expert knowledge, that the authority which works from above downward, that the advocates of unity and enrichment, that the laboratories and methods

[1] Address before the New England Association of Physics Teachers, Boston, May 24, 1902.

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could do, has been attempted. The same decline of physics is widespread among colleges, as President Eliot sadly notes in his late report but cannot explain. Now as this subject has been given such a prominent role as the typical science intended to lead to the introduction of others, this status is especially deplorable for the new education of science, and has given the advocates of Latin, English, mathematics, and modern languages,—all of which have increased greatly and all the pupils in which far outnumber if not far more than double those of physics, grounds against the introduction of science in the high schools, which some of the Latinists, notably Bennett, have used with great effect. Something is very wrong. What is it?

I make no claims to any special knowledge of physics; but as a student of education I believe that the cause lies in the neglect and the violence done to the nature and needs of the youthful soul by the present methods and matters.

1. Boys in their teens have a veritable passion for the stories of great men, and the heroology of physics which if rightly applied might generate a momentum of interest that would even take them through the course as laid out should find a place. As with mechanical so with psychic force, it must be generated over a large area if it is to be applied intensively at a single point. Physics has its saints and martyrs and devotees, its dramatic incidents and epochs, its struggles with superstition, its glorious triumphs; and a judicious seasoning, perhaps, of the whole course with a few references and reports by choice, with material from this field would, I think, do much. Moreover, we see in late years more and more frequently, even in the college and university, popular and new courses on the history of mathematics, chemistry, astronomy and biology, showing that the historic sense is awakening in these fields and giving a present sense of achievement and progress, and nothing appeals to the young more than to feel vividly the sense of growth.

2. The half-score of text-books in physics I have glanced over seem essentially quantitative, require great exactness, and are largely devoted to precise measurements, with too much and too early insistence on mathematics. Teachers in this field have a strong sense, often expressed in your Proceedings, that mathematics is the only proper language of this science. The topics are no doubt admirably chosen, their sequence the best *from a logical standpoint*, and they are such models of condensation and enrichment that it seems to the organizer and to the specialist alike almost perversion that our youth pass it by. But boys of this age want more dynamics. Like Maxwell, when a youth, they are chiefly interested in the "*go*" of things. Recent statistics of boys' general reading in our public libraries show that they were but little interested in much especially

prepared for them like the Youth's Companion and St. Nicholas, but that the Scientific American and its Supplement led all the rest. The boys with aptitudes for physics want to understand how engines, machinery, perhaps especially dynamos *work*. I have known some greatly interested in the Patent reports; but everything to really appeal to them must *move*. In Germany there are many toys that might be called scientific, of which my colleague, Professor Webster, has an interesting and suggestive collection. Hence, too, the fascination with which in my school days we delighted in lectures and demonstrations with very crude and often home-made illustrative apparatus, which a clever teacher devised and set up for us. This exactness which involved applying mathematics came very late in the history of physics. Even Tyndall, and more yet before his day, knew little of this and never used it in classes, but were most inspiring teachers who powerfully evoked thought and were not affected by the modern rage to apply mathematics to the boy's brain processes, even by marking his examinations and recitations.

3. I must confess myself a convert to the dire heresy that in this and some other fields very much thoroughness and perfection violates the laws of youthful nature and of growth. The normal boy in the teens is essentially *in the popular science age*. He wants and needs great wholes, *facts in profusion, but few formulæ*. He would go far to see scores and hundreds of demonstrative experiments made in physics, would like to repeat them in his own imperfect and perhaps even clumsy way without being bothered by equations. He is often a walking interrogation point about ether, atoms, x-rays, nature of electricity, motors of many kinds, with a native gravity of his mind towards those frontier questions, where even the great masters know as little as he. He is in the questioning age, but wants only answers that are vague, brief, but above all, suggestive; and in all this he is true to the great law that the development of the individual in any line of culture tends to repeat the history of the race in that field.

4. Last, and perhaps most important of all for our purpose to-day, the high school boy is a utilitarian. The age of pure science has for him not come, but its applications, though not logically first, precede *in the order of growth and interest* the knowledge of laws, forms and abstractions. He would know how the trolley, how wired and wireless telegraphy works, the steam engine, the applications of mechanics in the intricate mechanisms, almost any of even the smaller straps and buckles in the complex harnesses science has put upon natural force charm him. Physics in the field, the street, the shop, the factory, the great triumphs of engineering skill, civil, mining,

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mechanical, inventions in their embryo stage, processes, aerial navigation, power developed from waves, vortexes, molecules, atoms, all these things which make man's reaction to nature a wonder book; and we, in frequent conversations and copious information should arouse his imagination, for this is the organ of the heart and opens up the way for reason. The boyhood of the great makers of physics and astronomy, who have found out and opened a natural way for their own genius, is a lesson which most teachers of physics, I fear, have not enough profited by. The subject matter of their curriculum is too condensed, too highly peptonized for healthful assimilation; and we are too prone to forget that we can only accelerate nature's way, but never short-circuit it without violence.

The influence of the college professors of physics and their text-books has in the last decade or two been a stimulus of very great value in elevating standards, but this work now, in my opinion, has been overdone and the time has come when high school teachers should assert their independence and make adjustments to a stage of youthful interest, of which the college professor knows little. High school physics has problems all its own to which its representatives should address themselves with courage, resolution, and above all with independence, or else the present decadent tendencies, more due to college control through the undue influence of examinations and standards than to them, will continue and with it the scientific movement, of which it is in a sense the pioneer, will suffer still more.

I accepted the invitation to speak here to-day because I believe that your suggestion of closer relations between physics and manual training may open one important way out of the present condition. Such *rapprochement* would involve important modifications both in your work and that of the manual trainers; but it is precisely and very happily just such modifications as would tend to this approximation as, in my judgment, are greatly needed for both physics and for manual training, although for effective and complete correlation perhaps more and harder changes would be necessary for representatives of manual training than for you.

I turn, therefore, now to the other party in this problem of co-ordination.

No one can fail to admire the recent and magnificent institutions for secondary manual training lately opened at a few favored places in this country, which it is such a joy and such a happy augury for the future to visit, where the muscles—nearly half the human body by weight and the only organs of the will, which have done all the work that man has accomplished in the world—are trained; because physiological psy-

chologists can almost endorse Huxley's statement, that man excels the ape in brain power no whit less than he does by the power to use his hand. The studies of the brain of Laura Bridgman and many others show that those parts of the cortex which innervate the hand grow deep if it is trained to skill, and atrophy if it is unused; so that no kind of education so demonstrably develops brain as hand training. Doing is an organ of knowing, and the education of the booklings who neglect it is unreal, formal and superficial. Motor education has not only come to stay with the world, but every sign indicates that it commands the future, and has before it a surer and greater growth than any other field of education. Everywhere and to everything pedagogues now feel that they progress when they can add a motor element. Moreover, muscular development in the order of nature not only precedes, but conditions that of mind in its highest activities. It is related to it as what is fundamental and primary is everywhere related to what is secondary and accessory. But I cannot forbear a grave and growing fear that the leaders of manual education neglect what Mr. Richards well calls its thought side, and what Professor Thurston insists must be more and more basal for every kind of practical and industrial training, whether it be liberal or for trades. Machinery must not make its pupils merely mechanical, and the wood and iron work are not the only and perhaps not the most educational. Progress now in every modern industry is coming to have more and more a scientific foundation and is resting more squarely and directly upon knowledge of the laws of nature. Physics, chemistry, biology, mathematics and geology supply the universal basis and every manipulation of matter is a case of applied science. Science is thus to have an ever vaster role, and all the leaders of industry must serve an ever longer apprenticeship to science. What we apply of it now is but a small part of that which will later be needed. The preparation of youth for all the practical vocations must be constantly longer, and all the arts are ceasing to be empirical and becoming more and more dependent upon knowledge of the laws of nature.

From this point of view, I, for one, believe that our manual training high school work is too mechanical; that it does tend a little too much to make joiners and cabinet makers in its wood side and machinists in its metal work. To be really liberal, the hand must simply be used as an instrument for opening the intellect and even the imagination, and therefore be predominantly humanistic, if we would avoid defect, and be brought into the closest possible connection with the widest area of vital world interests. Manual training should not only be more a fore-school for engineers of various kinds, but should at every point be developed in closest rapport with physics and

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the other sciences that minister to it, and should be regarded mainly as a means of widening knowledge and deepening interest in these. Man is a tool-using animal, but all the mechanician's rules should teach him more than to use his tools. On the basis of agriculture and the scores of vocational arts that underly and condition our modern life, can and will be built up a system of education that is most truly liberal and better calculated to make scholars, investigators and leaders, and give more freedom and initiative, with less pedantry of method than the world has yet seen. Tools and machines are not educative unless they open the world of thought that these have made. The jack-knife and whittling school, the simplest chip carving, if they use the brain more, are better teachers than all the formed and methodic products of manual schools stimulated by prizes and competitive exhibitions.

There are now two chief kinds of manual training very distinct in idea, plan and scope. First, those just described, and all others where work is carefully graded as to stages of progress and perfection; where exactness and finish are required; those devised for the sake of tools in the order of difficulty, passing from them to machines; those where great stress is laid upon the order of material worked with—paper, clay, wood, iron, etc.; in all these the finished product is either of no use or of very little, but the models are arranged according to grades of difficulty and such utilities as they may have, as for paper cutters, blotters, picture frames, are subordinated. At this point one has reached the stage of the dove-tailed joint with a miter; or in wood turning he has come to the goblet; or in forging has reached the cold chisel, chain welding, or ribbed handle, the use of the thing made being only slight or incidental.

In the other type of manual training, the product is cardinal. Something is made because it is wanted or needed. *Finis coronat opus.* These are not trade schools like the Textile School at Lowell; the watchmaking school of the Bradley Institute; the Auchmutty School for plumbing, papering and brick-laying, but are rather illustrated by a vast variety of institutions like Abbotsholme, where the best boys in England train to cultivate the soil, care for stock, make their boats, boat-houses, bird-houses and band-stands; the Hampton, Pratt, and the Clark Institution at Atlanta, with twenty-three industries, where students quarry stones, cut oak, make brick, draw plans, and put up dormitories and other buildings; our own Thompson's Island, etc. These schools, although often for Indians, negroes, or juvenile delinquents, are, I believe, the very best schools in the country if judged by the annual growth in mind, morals, health, ability and knowledge of the

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pupils. The most instructive and interesting points on the educational map to-day are schools like that of Mr. Roe and the school at Phœnix, Arizona, where Indians teach each other their own industries now in danger of going the way of the lost arts—basket weaving with all its wondrous skill, birch canoes, moccasins, the pottery of several tribes, bead work and tent-making. Often, if not usually, in the history of education, schools devised for the lowest classes of society and all in their interests are gradually usurped by the highest classes and slowly transformed, not in all respects for the better. An inexhaustible wealth of curricula is waiting to be developed, which shall train character, intellect and will, and be essentially liberal and humanistic, out of industries. Just as Sloyd begun by attempts to teach Swedish peasant children to make crude utensils, so from the Indian industries alone can and will be evolved curricula as no whit less educative and with the added stimulus of making things that are both serviceable and salable. But this is a long chapter of arts and crafts which should come elsewhere. It is the genetic, so different from the logical order. Thus industries arose, and thus the child develops faster who repeats the history of the race with judicious omission and with the most educative processes wisely accented.

In his admirable address[1] President Pritchett well points out the short-comings of Boston in technical and industrial training as compared with Berlin, and well recognizes the unfortunate proclivity of those who represent manual training in high school grades to hold aloof from immediate utility and practicality as represented in monotechnic or trade schools, as if this work was something almost contaminating. For myself, I think the manual training high school of the cabinet making and smithy type a very inadequate, if not an almost perverted, representation of what truly liberal manual and industrial training ought to be. What has been the main spring and motive in every step of man's marvellous industrial development from the age of stone, bronze and iron up to wireless telegraphy? It has been *interest in the product*, and to this the *process* has been absolutely subordinated; but now comes the pedagogue with his supernormalized methodic bias and gives us curricula, some of which are about the purest representatives of form without content that even the educational world can show. No boy ever really puts his head into his work unless he is full from start to finish with the thought and the desire of using what he is making, and to my mind there are few more ghastly products of pedagogic art than the so-called graded models—iron in their in-

[1] Technology Review, January, 1902.

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flexibility and wooden in their intelligence—and with the vitalizing idea of utility and that from the boy's standpoint, carefully dissected out. Of course the boys are interested in their tools and machines in a way, but the years they spend in these institutions fall far short of educating the head in proportion to the hand as should be done; and I believe specific trades would really better train heart, head, hand, and above all *morale* than do these thin curricula, which are *neither liberal, because they hardly touch science, which is more and more the basis of every industry, on the one hand, nor utility, which is the spring of all industry and trade on the other, but hover aimlessly between.*

What then should be done? I answer, the true goal to be gradually approximated here should be curricularized toy-making for the lower grades of manual training, and this should merge over in the high school grades to the construction of apparatus illustrating scientific principles. Many tentatives in both these lines have been made in various places, especially in Germany as Waldemar Goetze shows, enough to show that the elements of toy and apparatus making can be sufficient for all educational purposes and would, as it were, shunt in myriads of brain cells which are not touched by present methods. Here we need a touch of originality and not blind aping of older institutions in other cities or even abroad.

I have often thought in examining toy exhibitions, of which there are several great and permanent museums in Europe with national congresses, how much could really be taught by them. Many German toys, with bugs that flutter and creep; birds that fly, peck and sing; monkeys that climb and turn somersaults; soldiers that march, stab, thrust or shoot; boats that go both by wheel and rudder; dolls that walk, gesticulate, say "Twinkle, twinkle little star," with phonographic apparatus; flowers that open to the toy bee and then spring upon him like the Venus flytrap; balloons that propel and steer themselves; steam-engines that go and then reverse;—these are often *masterpieces of mechanical simplification.* Some of them illustrate fundamental principles of electricity and magnetism, acoustics, equilibrium, etc., and I believe would have a suggestiveness that would well repay study for my committee in their search for models of things to make in the shop and from which even their algebraic formulæ could be better taught when they were done. Much help would be found in a few of the best boys' books like Cassell,[1] Baker,[2] Beard,[3] Routledge,[4] and Pepper.[5]

[1] Book of Outdoor Sports and Indoor Amusements.
[2] The Boys' Book of Inventions.
[3] What To Do and How To Do It. American Boys' Handbook.
[4] Science in Sport Made Philosophy in Earnest. Discoveries and Inventions in the Nineteenth Century. [5] The Boys' Play Book of Science.

Closely allied to this a competent and open-minded committee would be sure to find interesting suggestions in the literature of magic, especially in the books of Hoffmann and Hopkins which, like the best toy books, abound in scores of things that could be easily made in a manual training department, which could be graded, and which when finished would illustrate scientific principles and give all the zest that the natural boy feels in the implications of superior knowledge which thaumaturgy supplies.

Of course the chemists should come into such a conference or be represented in a committee seeking to effect this co-ordination. The survey, too, should be wide. Those who have visited the magnificent École du Livre in Paris, where printing, binding, paper making, and everything about books is taught, would find here new elements of manual training;—rubber work, hard and soft, so far as I have seen its processes; soldering and plumbing as exemplified in Mr. Tower's admirable little book;[1] certain elements that Mr. Hammel, of Baltimore, has proven practicable, and a little library of books like R. S. Baker's could be utilized. In these ways alone, problems of the lever, balances, the wedge, pulley—fixed and movable, pump, monochords, rods that vibrate, whistles, perhaps tuning forks, prisms, small lenses which can easily be ground by boys, mirrors, some of the principles of steam and heat conductivity and calorimetry, perhaps some stone work which has been found very practicable at Phœnix; the magic lantern, stereoscope, magnetism, electricity, kaleidoscope, telegraph, etc., could be naturally approached with a full head pressure of normal boy interest.

I will even venture to add a few special things which might be done and made in a manual training school, and which touch the heart of the physics interest in the boy.

The history of glass work goes back to ancient Egypt, and is a very interesting chapter in the history of industrial education. Until nearly a century ago, glass-blowing was often a profession for gentlemen. Its educational value for the hand in training it to work under the guidance of the eye and the brain has always been highly praised. Glass is almost the only thing schoolable that requires exact time. You can stop lead and wood, but here all must be done on the moment, like tempering steel. Bolas, Shenstone and others show us how boys can be trained to make a plain thermometer the first day. The equipment with the stock of tubes, blow-pipe, bellows and tools, occupies hardly more space than a sewing machine, and some devotees claim

[1] Plumbers' Manual and Text Book. Arranged and copyrighted by F. W. Tower, Springfield, Mass., 1901, pp. 242.

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should have a place in every household where there are boys or girls. In six lessons, I once took, I learned to drill with turpentine; to use the diamond; to lead cracks; to seal, pierce, and grind both lead and soda glass; make a spirit level, etc. It is very easy to teach boys to grind small lenses, and with an annealing oven to work in fluoric and other colors; to gauge, clean, weld; do some decorative work: make and grind stoppers; choke or contract the bore; make funnels and joints; to calibrate and even to make U and spiral tubes and many pieces of very simple apparatus used for physics and chemistry. At South Kensington deep sea thermometers are made and lectures on the history of glass and its manipulations are given, and the manual discipline; which can be given thus, is compared to that of learning the piano.

Tops of very many kinds are easily made, and these are the open sesame to many of the simpler as well as of the profoundest problems in physics. Boys could easily make a plain Maxwell top and record some of the curves of its wonderfully complex gyrations which have not only illustrated, but so illuminated many of the highest problems, such as Professor Klein demonstrated in his remarkable lectures in this country by its use. Few things so combine the toy interest, so strong in every boy, with scientific insight, or impel so strongly from sense to reason. A graded course in tops alone might lead into the very heart of some of the profoundest questions in physics, and incite curiosity and develop interest in everything that spins or rotates, according to scores of laws and equations from vortexes and possibly atoms, ions and electrons, to worlds and stellar systems. No boy could take a well devised course in top-making without opening his mind and stimulating his thought in the highest degree and thereby making the hand an organ of science.

Kites also rest upon a rich soil of native interests and experience. Beginning with the simplest form that fill the air at the kite season, or when a local fad is at its height, up to kites with attachments, flyers, diverse individual and perhaps fantastic forms, up to the complex series of box kites that at the Blue Hills of Milton and in many other meteorological observatories are lifted into the air and clouds to penetrate the secrets of the humidity, temperature, changes of pressure, velocity, perhaps even with photographic attachments, etc. *Where work that the boy has made himself with his own hands goes, there his interest follows.* His reading is stimulated; the inner eye back of the retina is opened, and that priceless though semi-conscious education, which is by hints and suggestions and which is far more rapid and indelible than anything in the memorized and examinable region of the soul, goes on by leaps and

bounds. Thus skill with the fingers is harnessed to development of the cerebral neurons, as it should be, and we are working in the depths and not the shallows of the soul. Baden-Powell, Woglam, Hugh Wise, Varney and others have made a new contact between boy interest and science here that should have consideration.

Photography should be especially examined for its educational features. Among the most interesting educational institutions I have ever seen, is that of the Imperial School of Photography, with its magnificent building, in Vienna, where all the processes of reproduction, lithography, lantern slides and methods of scientific demonstration, as laid down in the well known text-books of Dolbear, Wright and Elmendorf are taught. At least some of the schools of horology, especially that at Besançon, ought to furnish suggestions, with interesting methods of making and testing pendulums, studying sound vibrations, with simple chronometric Verniers, study of springs and methods of synchronization.

Thus, in fine, holding as I do that instruction in physics for high school grades would gain by being made less exiguously scientific and with more alloy of practicality and natural interests, and that on the other hand manual training still more needs reconstruction in the interests of culture. I think the time has come for a joint committee who should, not excluding chemistry at least, carefully survey the whole field of motor education and select and co-ordinate therefrom, wherever found, elements which will at the same time develop a more intelligent basis to manual courses and give more concrete, all-sided interests their scope for physics. Each is suffering for much that the other could supply, and which, if based upon natural instincts and nascent periods of youth, they would inevitably overlap and not only supplement but complement each other. Their divorce is a strange and surely transient anomaly in our educational system. Precedents exist, I think, for every step in the correlating processes that would be found wise, and which would bring to the other the new access of interest, and therefore of power and educational progress.

Scientific apparatus is more generic than machines; some pieces are products of decades and even centuries of progressive improvement. Perhaps nothing that man has made is so instinct with reason and science, or such an open sesame to the laws and mysteries of the physical universe. Without a large arsenal of these, every physical laboratory, no matter how splendid, is a monster without a soul. The quality and abundance of these are perhaps the best general test of the professor and the quality of his work in a high school. The best courses

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of lectures I have ever attended were in Germany, one of which was in what was well called a theater, where several assistants were employed to adjust the illustrative apparatus which was drawn up through the floor, and let down from above and the sides, prepare the demonstrations, and manage the lights; and in the other, a large historic element was introduced by demonstrating apparatus. Illustrative devices perhaps might be added to the material chosen from. That the making of the best things selected from this vast field will be a part of high school training in physics ultimately, I have not a shadow of doubt; but it may be that physics will have to organize these courses by itself with little help from the representatives of manual training, who in this country are too dominated by the influences which originated in utilities, but in being transferred to this country, so largely eliminated them that it has grown formal, hollow and artificial.

FETICHISM IN CHILDREN.

By G. Harold Ellis, Fellow in Clark University.

§ 1. Use of the Terms Fetich and Fetichism.

The words fetich and fetichism are commonly used as blanket-terms for all forms of savage religion whether worship of sticks, stones, trees, rivers, mountains, fire, animals, or the heavenly bodies, but following Maj. A. B. Ellis (8, pp. 176-195), who has spent many years as an officer in West Africa, I here restrict the terms to their original significance.

When the Portugese began explorations in West Africa some 400 years ago, Christian Europe was full of relics and images of saints, charmed rosaries, crosses, etc., which were supposed to give protection and success, and when worn gave still greater protection. Such charms were called *feitiços*, and when the Portugese saw the negroes paying the same reverence to charmed stones they applied the same word to the savage charms.

As to this significance of fetiches there is much diversity of opinion. To Brinton the fetich is something more than the mere object (4, p. 132). That the savage beats his fetich when it does not bring him success proves the contrary, nor have we evidence that primitive man was ever able to distinguish between the body and spirit.

The whole matter of fetichism is made clear by a study of the probable line of development of primitive religions.

Dr. Hall has shown in his exhaustive study of fears (13) how much the fears of our animal ancestors trouble us today, but what is true of us is even more true of primitive man when he first emerged from brute life. To him there was no line drawn between animate and inanimate objects; animals, trees, stones, and the heavenly bodies were all living, thinking beings like himself. The dependence upon nature for life caused him to treat the real or imagined source of his good just as he treated a fellow-man—he frightened and coerced when he could and gave gifts for what he could not get by force.

The conception of the gods as distinct from and superior to men has only been evolved slowly in history. At first the supernatural agents were not much, if at all, superior to man. As his knowledge increases man realizes how small and insignificant he is. This feeling but increases his sense of the great-

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ness of the spirits. With this growth of knowledge, magic falls into the background and prayer and ritual take its place (9, p. 20). "How far fear is the basis of religion we may never know, but certainly the feeling of awe and the sense of absolute dependence on powers above us will remain to be modified by love but never banished" (13, p. 232).

Fetichism at first confounded the spirit and the object, later when man became more cultured he thought of the fetich as the place where the spirit chose to manifest itself, and finally came to consider the fetich as a symbol, an aid to devotion, or even came to rise above its use. With growing culture came a growth in æsthetic sense and the fetich is improved by a gradual conformity to the human figure, or some animal form. There is no line of demarcation between the rough unhewn stone fetich and the Aphrodite of Melos.

Primitive man worshipped where it paid him to do so and naturally enough under the influence of his needs and the environment, certain things that ministered to those needs were worshipped and all others fell into disfavor.

Religion is supposed by Spencer (23, ch. 21) to have originated in ancestor worship, and by Knight (26) and others, in phallicism, but at most these are forms of religious expression —never its source. Hence we may find all objects of nature worshipped by a people, or only a few to the exclusion of the rest.

"In course of time the personalities of the fetich worshipper became to some extent generalized. Homogeneous appearances are grouped into classes and each class referred to a single deity, and hence polytheism" (1, p. 22-3). Further development leads to pantheism or monotheism.

Fetichism is often used as a term of opprobrium for senseless reverence of savages or non-Christian religions but Christianity has more unseemly accretions than the Greek religion. Compare, for example, the Aphrodite of Melos with the hideous images and relics that adorn so many modern churches.

§ 2. Prevalence of Fitichism.

Fetichism as a phase of the lowest stage of religious expression, animism, is found all over the world.

"Animism with its variants, more or less developed is the religion of all uncivilized peoples untouched by international or universal religions: Buddhism, Christianity, Mohammedanism, etc., and even among those who have accepted one of these religions, animistic ideas persist with great obstinacy. How many Christian peasants there are who believe as firmly in spirits, in ghosts, in guardian genii of cattle and crops, as in the various saints of the church with whom they sometimes

confound them! Besides, spirits, such as angels and demons, are admitted by most Christian churches. Fetichistic practices also form part of the outer worship of Lamaite Buddhism and Taoism, and they are not only tolerated but prescribed by other universal religions. I need but mention the amulets, talismans, scapularies, miracle working relics, etc., among Mohammedans and Christians" (7, p. 218).

Stone worship exists to-day in England (14, pp. 108-142), Scotland (11, p. 115), Wales (21, p. 361, etc.), and France (20), as widely as ever.

"Modern folk-lore is full of fetichism and it is a development of the religious sentiment which flourishes in all times and climes. Amulets, charms, lucky stones, everything that we call by the familiar term of *mascot*, partakes of the nature of a fetich. That some fancied potency not to be found among its physical qualities, it is believed to bring us good fortune" (4, p. 135).

"When the Christian touches the bone of a saint that he may be healed of an infirmity, or when he speaks of his church edifice as "the house of God," or when he packs in his trunk a Bible "for luck's sake," he is as much a fetich worshipper as the negro *caboceer* who collects around him a thousand pieces of rubbish because he thinks they have brought him good fortune" (4, p. 134).

That this fetichism did not come from savagery alone, but even from the highest culture and most spiritual religions, a study of the Greek religion and the Bible will abundantly show." The sacred image of Diana of the Ephesians was nothing more [than a stone], and the Latin father Arnobius tells us that the image of earth, the Great Mother, brought to Rome from Phrygia with sumptuous pomp, was merely "a small black stone, rough and unhewn" (4, p. 147).

The original fetich stone has been found *in situ* below the statue of Apollo in Delos (19, Vol. I, 275-6).

Perhaps the strongest influence in Christian fetichism is the survivals of Jewish fetichism that are found in the Bible.

Massebas in the Bible appear simply as memorial pillars without any definite religious meaning; but this is due to the fact that history has been conformed to the standpoint of the law and later prophets who looked on the ritual use of sacred pillars as idolatrous (22, p. 186). These pillars were phallic symbols (2, p. 102) which had developed from the older and more primitive stone worship. The Beth-el was but a stone which Jahveh was supposed to inhabit (Gen. 28 : 22). Even when Judaism had risen above stone worship, the massebas were preserved but the original significance was forgotten. These pillars and the asheras were considered as essential to worship as the altar itself.

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(Ex. 24 : 4; Hos. 3 : 4; 10 : 2; Isa. 19 : 19). The ark probably contained a meteoric stone which was considered the abode of Jahveh. Stones were considered to be the abode of evil powers (Lev. 14 : 45). The will of God was supposed to be revealed in the magical stones worn by the high priest. A most suggestive study could be made from the references to stone or rock in the Bible. In 1 Cor. 10 : 4 the word *rock* is used with reference to God in a most inappropriate way. Remembering that the philosophy of the savage is the poetry of to-day, much can be found in the Christian hymns that is a direct survival of fetichism.

Stone worship has been the source of inspiration of many of the most beautiful and spiritual Christian hymns. "Nearer my God to Thee" is based upon Gen. 28 : 10-22 which is thoroughly fetichistic. Other hymns of like character may be seen in "Like Jacob in his Bethel Rest" and "Nettleton," especially the line—

Here I'll raise my Ebenezer.

Most hymns express a sense of protection from evil rather than worship of the attributes of God, *e. g.*: "O then to the Rock let me fly," "Rock of Ages," "The Rifted Rock," "My Rock and Shield." Some hymns worship the cross as a fetich or unite it with that of the rock, *e. g.*, "Nearer the Cross" and "The sure Foundation;" the opening words of this last begin:

1. There stands a rock, etc.
2. That Rock's a cross, etc.
3. That Rock's a tower, etc.

In "I'm so Glad," we find:

He is my "ark of safety"
And my "rock" when storms assail.

This combination of "ark" and "rock" is just what a sailor would most dread, and here we see how words will persist even when they have lost all meaning.

"The Mercy Seat" recalls the savage seeking response from his fetich.

Most remarkable of all fetiches is the Bible. When the Revised Version was translated the translators were so bound by popular reverence for the Scriptures that they did not dare depart from the old King James Version. The history of the American Bible Society is one of blind senseless regard for the letter even to misspelled words. A volume could be written on the fetichistic regard with which the Bible is held. That the most glaring fetichism exists in the midst of the highest civilization can be seen from the reverence for the English Stone of Sconce and other paraphernalia of coronation. No benighted

savage could show any more reverence for his fetich than the American flag receives officially from our government. We may call it *sentiment* and *symbolism* but that is only a euphemism for what in the savage we would call by another name.

§ 3. Recapitulation of the Race in the Child.

The old saying that parents live again in their children is no less true than that the child lives again the history of the race (6, pp. 213-353).

Biologically the child passes through the whole range of types from the protozoan to man. At conception the organism is a minute unicellular structure, by the second week it has become an invertebrate worm, at three weeks it is a fish and breathes with gills, by the fifth week it has developed into an amphibian and the limbs have become differentiated and are webbed; thence on to the middle of the third month reptilian characters predominate. Gradually the fœtus assumes an anthropoidal character and from about the fifth to the seventh month the body is covered with hair like the apes.

Any interference with the course of nature may cause arrest at any of these stages and result in monsters at birth.

The atavisms of young children are suggestive. The infant sits with the soles of the feet together, as do the apes. A new born child can sustain itself for one minute by clinging to a stick. This is not so strange when we remember that the young of apes have to cling to their mother. There are a large number of rudimentary organs in the body, which, like the vermiform appendix, were useful at some stage of the organic evolution (28).

Psychologically there are many things explained only by the recapitulation theory. In dreams the old racial fears often make nights miserable (13, p. 189). Kissing has developed as evidence of faith that the person would not be eaten, a fear which so common in our animal ancestors must be taken to account for the strange fear many have for teeth, fur, etc. Blushing is a survival of the sex fear. Distrust of strangers and neighbors that is so common in sparsely settled communities is a survival of the fear primitive man, always at war for existence, had for his fellow-men. The suddenness with which the fear of disease and death may spring up to over-mastering power "shows a deep hereditary root copiously watered by superstition" (13, pp. 213-19, 226).

The tendency of children to run away is an echo of the migratory impulse of our ancestors, which has become abnormally developed in the tramp and "globe trotter" (18).

The fascination water has for children and even adults has

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been taken by Bolton as "the abundant proof of man's pelagic ancestry" (25).

Even in their games boys reduplicate the whole social history of the race (17).

In view of these well attested facts it is fitting that we look to the child for evidence of the beginnings of religion Whatever religious impulses are found will be founded on superstitious fear or unquestioning faith in the word of adults.

§ 4. The Collecting Instinct a Survival of Fetichism.

Mrs. Burke in her study of the collecting instinct finds that this impulse "is practically universal among children. . . . It has its rise in early childhood, develops rapidly after six years, and is strongest from eight to eleven years, just before adolescence. . . . . In childhood there appears the crude instinct to collect anything, however trivial, anything simple and easy to obtain" (5, pp. 204-05).

Her table IX (p. 200) is suggestive:

Motives for Collecting.

	Boys' motives. per ct.	Girls' motives. per ct.
Imitation. Because others did,	29	25
Rivalry. To get as many or more than others,	2	4
Quantity interest. To see how many,	20	15
Interest in kind. To see how many kinds,	3	6
Indefinite,	8	6
Enjoyment, use, of objects,	7	10
Pastime. Pleasure in collecting,	4	3
Interest in objects collected,	7	9
Æsthetic attraction of objects,	3	8
Commercial motive,	7	2
Souvenir interest,	2	5
Miscellaneous,	8	7

It will be noticed that imitation and rivalry account for but 31% of motives in boys and 29% in girls. The æsthetic, commercial, souvenir, miscellaneous (luck, to give away, etc.), motives is 20% in boys and 22% in girls. This leaves 49% in both boys and girls to be accounted for in pleasure of one kind or another.

Here the matter is not explained, for why should children take pleasure in collecting such trivial and useless objects?

This is all the more complicated by the fact that 8% of the boys and 6% of the girls could give no reasons for their collections.

Mrs. Burke saw there was something yet to be explained but did not offer a solution:

When we consider its universality, its wide-spread affection, when we consider its intensity, the number of collections children make and the interest children take in them, when we consider the variety of the things collected, showing that the mania seizes upon any and practically every outlet imaginable, and showing, too, that to collect is more important than what is collected, when we consider, moreover, that the phenomenon has a definite progress,—a rise, a growth, and a decline, an age—development,—we are inclined not to hesitate in calling it an instinct (p. 206).

The psychological explanation of this instinct seems to be that the child has in it the survival of the savage impulse to collect the strange and beautiful in the hope that some good will come thereby. This vague unanalyzed feeling in the child was the philosophy of its savage ancestors. Just as nameless fears and mysterious impulses are echoes of ancient psychoses, so is this collecting impulse a dim reminder of the fetichism of our ancestors. Evidence of this is seen in Mrs. Burke's study in the fact that even "a comparatively few" reported collections made for "luck" (p. 205).

Many returns from a questionnaire show the collecting was made instinctively:

1. F., strung beads but did not regard them with any degree of feeling, doing it simply for amusement.
2. F., collected small stones and shells but did not attach any special significance to them, merely collecting and hiding them.
3. F., collected bright pieces of glass and treasured them as if they were gold.
4. F., had a season of collecting and keeping stones. She had no special feeling for them except that they were pretty.
5. M., 17, saved bright colored stones, and smooth, round and small stones.
6. F., used to gather baskets of stones, especially pretty marked ones, and place them in rows on the piazza.

The element of mystery is the cause of many collections.

7. F., always picked up pretty stones. Would put them in water to see the color come out.
8. —., could not understand why stones were less pretty when dry.
9. F., was very fond of breaking them and noticing the different colors and streaks. Stones with a black line around them and different shaped stones attracted her and she collected many.
10. F., collected stones and cracked them open to see which were the prettiest.

§ 5. Children's Animistic Conceptions of Inanimate Objects.

It is hard for the child to distinguish between the self and not-self. This is seen in the way in which things are regarded as a part of the personality or family.

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11. F., when two or three, had a particular spoon that she ate with and without which she would not eat. She would allow no one else to use it.

12. F. I kept pictures, magazines and books and did n't like to have them injured. I never, to my knowledge, thought of these things as being alive—I was simply very fond of them and wanted them to be mine because they satisfied some part of me.

13. F., 18. I want to keep forever everything I ever worked and played with. Toys and even school books seem a part of me and I would not part with them.

14. F. At home they have a large brass match box, 200 years old, which has always been in the family. She feels that it is a part of her ancestry.

15. F. Her brother has an old kitchen clock which used to be in her home. She regards this as one of the family.

Playthings are regarded as persons.

16. F., 4, is in love with a little chair, wants to take it to bed and everywhere, and wished it to see everything. She cares less for other far prettier things.

17. M., 5, was strongly attached to a small, rude chair-shaped block of wood, called it "boy block," took it everywhere, hugged it, cried when it was lost, etc.

18. F., 16. The deepest love I ever had for anything was for an old stuffed elephant, out of which the sawdust was leaking.

19. F., 17. My brother, aged three, has a bit of an old strap, which he always keeps and talks to and takes to bed with him. We cannot find out why.

20. F., 19. I wore a star and crescent badge of our club. I felt it was somehow like a man.

21. F., had a small stone over 100 years old. When it was broken she felt just as if a person had been hurt.

22. M., 9, played pretty stones were people.

The rudiments of a philosophy is found in the child's explanation of the origin of things.

23. F., 17. Metals and minerals awed me, from a sense of vast antiquity. I thought metal working the chief occupation of early man.

24. M., 23. As a boy, I saw lime slacked and immediately conceived great awe of it. I got and cherished a piece and fancied many things about it.

25. M., 23. wondered where stones came from but was ashamed to ask.

26. F., 19, thought stones came up out of the earth.

27. M., 7, thought stones were made of ground when it got hot; clouds of dust turned into stones. Wondered if they turned back.

Here we have speculations on ancient history and attempts to solve the problem of nature. No. 27 is remarkable as closely approximating Heraclitus's theory that all is a flux, and also suggests the ancient Greek theory of physics that material phenomena are different condensations of a primal substance.

28. F. I had certain places where imaginary friends lived, and did n't want other people to go there.

29. F. I remember I used to take collections of different kinds of

buttons and imagine them as men and women and make them act as if they were alive. Sometimes I thought they were an army and I would make them have a fight by shaking them up and all those turned over I thought of as dead.

Such conceptions as these give the foundation for a mythology that only needs time to develop it.

Stones are regarded as having feeling, as knowing what is going on, as sympathizing in trouble.

30. F., 16. Stones have feelings. She fell on one and struck it back to make it feel bad too.

31. M., 18, was sorry for little stones and hated to tread on big ones if pretty.

32. —., hated to stamp on gravel walk to hurt the stones.

33. —., thought everything felt and could be hurt. Sorry for plain stones.

34. F. I had also a number of magazines which I read and re-read and they seemed to me more like real friends than books.

35. —., collected white stones and thought they appreciated love.

36. —., played with and talked to stones, and put them in a silk lined box.

37. F., 6, kicked the top stone off a pile and said "You bad stone, you lay on top and hurt the rest." She then took the pile apart and laid each stone by itself on the ground.

38. —., was angry at stones and kicked them.

39. M., stubbed his toe on a stone and tried to break it with another stone.

40. F., when angry vented her anger upon the object which caused it.

41. F., vents anger upon the thing that bothers her—if algebra, she pounds it; if a door she slams it.

42. F., when she breaks an object she throws it to break it more because she feels so angry that it has been broken.

43. F., when angry likes to slam doors because it gives vent to pent up feeling.

44. F., when angry slams books to make a noise, and kicks chairs to get them out of the way.

45. F., when angry would go to her room and throw and tear things. She did this to show that she could conquer *something*. She would then try to mend the broken article.

46. F., feels that stones have sympathy; that the one in her ring knows what is going on. Seems pathetic to her to throw a pretty stone into water.

47. F., would not throw a pretty stone into water because she would not want to part with it. She regards stones as friends.

48. F., would feel very sad for throwing a pretty stone into the water because she would not want harm to befall anything beautiful. She always felt that familiar objects felt sympathy for her.

49. F., 8, threw stones into deep water and cried because she was sorry for them. She thought stones stuck to the bottom of ponds and pails, and wondered if they were hurt; if it was cold, dark, smothery.

50. —., tried to think how the stone felt in the water and mud.

51. —., thought stones were angry at being thrown in water.

52. —., threw a stone in water and cried heartily.

53. —., tried hard to fish stones out of water.

54. F., feels that when the cold waves dash against the rocks, they must feel cold.

55. M., would not put stones in water because he could not live there.

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56. M. 6, threw stones into the fire and water and wanted to get them out at once.
57. F., thought a certain rock saw all she did and would sometime tell.

Human relationships are conceived of as existing between large and small stones, and distinctions between animate and inanimate objects are not made.

58. F., 19. Large rocks are the fathers of the little ones.
59. F., 18, thought sand was alive and grew. Sand was young stones that would grow up to be rocks.
60. —., when four, knew stones grew to be large rocks.
61. F., in the country said "Stones grow larger here than at home."
62. F., 17, thought a big black stone in the forest must be very old.
63. —. Two girls disputed whether stones grew and to prove her side, each kept one. The stone of the girl who thought they grew, did grow, but the stone of the other girl did not grow.
64. —., planted and watered stones to make them grow.
65. —. When a child thought stones were eggs and would hatch.

One of the most fascinating diversions of the child is to trace forms in the figures of the wall paper, or anything else.

66. F., used to look at the cracks in the walls and imagine them to be forms of animals or plants.
67. F., used to imagine pictures of people, etc., in the wall paper of a certain room.
68. F., found a piece of knotted wood that seemed to resemble a dog. She kept it and played with it thinking more of it than of her dolls.

Numbers 66 and 67 show an instinct that is very common in adults who delight to sit in the dark and trace in the glowing embers of the open hearth or the flickering shadows on the wall the forms of men and fairies, or grotesque animals. This instinct is especially noticeable when fear has aroused it to people the darkness or an unfrequented wood with nameless monsters. One of the things that helped primitive man to fill the world with spirits must be the phantasies of his mind which seemed to appear and dissolve into the natural objects to appear elsewhere. Under such a frame of mind primitive man came to think of the spirits as dissociated with natural objects but manifesting themselves through them as caprice prompted.

The savage to-day does what No. 68 did. He sees a knotted piece of wood which happens to suggest something to his mind and at once the piece of wood becomes to him the abode of a spirit and is taken home to give protection to him and his property.

In the child there is the combination of the mother-instinct with the fetich.

The child's plaything may suggest the features of a person disliked :

69. F. I had one doll which I never liked, because it resembled a

very disagreeable person. We used to hang this doll on the clothesline and take turns throwing stones at it.

This may appear a meaningless matter, but it is what is very common among savages and survives in parts of England and elsewhere. To the savage mind anything that looks like a person is supposed to contain a part of the personality of that person. Anthropologists have nearly lost their lives in making drawings of natives because the drawing was supposed to contain the "shadow" of the person it resembled and if any ill should befall it, or any indignity given it, the evil results would fall on the original of the picture. In England it now occasionally happens that a doll dressed to resemble an enemy is taken and filled with pins with the purpose of causing the death of the person it resembles. Salem witchcraft days were full of such tales. It has not passed away in America, as the hanging in effigy, occasionally practiced, re-echoes the old belief that hanging in effigy would cause the death of the person.

§ 6. Child Magic.

To the savage mind the powers of nature were sometimes friendly and sometimes not. In the child's mind either of these views may be dominant, or the one or the other may be dominant as the child feels it has done right or wrong.

70. F., feels that a large rock near her home would protect her, and she often goes there to cry.
71. F., is afraid of large rocks, especially Sam's Point.
72. —. Between two high rocks is overpowered with sense of awe.
73. —. A group of large rocks caused fear of wild beasts.
74. —., 8, feared big stones, for the bad man who lives under them.
75. —., 6. Rocks suggested strong soldiers.
76. —. Rocks made men strong. It was pleasant to sit on them and talk to them. Always felt safe near them.

Probably very large rocks cause the sense of fear while the smaller ones give the sense of protection. The writer well remembers his childhood terror of large rocks and cliffs, but took keen delight in playing near small boulders. Even with more mature years, he feels *more comfortable* when there are no large rocks or cliffs near.

Two of the most remarkable returns are given here.

77. —., wishes on a stone and spits on it to make things come true.
78. F., 10, visits a white flat stone, wishes over it and throws it over her shoulder to make things come true.

Spitting on the fetich is common among savages and has great potency among the people of northern England.

Throwing stones over the shoulder recalls the myths of Deucalion and Pyrrha. Whether this myth had been told the child and her acts had been imitative, matters not, for the fact that

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such things could appeal to the child's mind shows that it is in the same condition as that of the savage.

Stones are worn as charms and any harm to them may bring bad luck.

79. —., carries a stone for fear of snakes.
80. F., carried a little red stone for protection.
81. F., has a lucky stone that she thinks brings luck.
82. F., 16, lost a game because the stone was broken and could not win.

When the child vents anger upon any object it is due to the idea, however vague, that it is to blame for all the trouble (see Nos. 38-45 above), or should exert some restraining influence, as the following shows:

83. F., 16, got mad one day and knocked a piece off a big stone with a hammer "so it would remember and not let me get mad again."

Other objects than stones are used for luck.

84. F. I remember picking up pins, and thinking at the time of the saying that they would bring good luck. I also have stopped when riding or driving to pick up a horseshoe.

A primitive faith cure or shamanism is found in children.

85. F., 17. A boy of five emptied his pockets for me. In them were . . . . a pill box with imaginary salve to cure your finger if it got hurt, some pretty stones carried "because," etc.
86. F., has a friend that has worn a necklace of black amber beads for years and knows that the reason she has had no sore throat is due to wearing these beads.

Instances of this kind might be multiplied indefinitely. In Vermont horse-chestnuts are carried to keep off rheumatism, "sulphur bags" are worn to keep away colds, etc.

"Making believe" is a universal occurrence among children, and exists in countless forms. One common thing is to turn work into play.

87. F. When I washed dishes I used to call the knives men, the forks women, and spoons children. The steel knives and forks used in the kitchen were servants. I always arranged them in families. This form continued until I was thirteen or fourteen years old I think.
88. F. When I used to be tired of practicing on the piano, I made believe that my hands or fingers were children chasing each other up and down the scales. The other instance was when I was wiping dishes, I called the knives men, the forks women, and the spoons children.
89. F., when she washed dishes imagined the dishes were so many orphan children that must have their faces washed before they went to school. If she neglected her dishes she had but to be reminded of the poor orphan children with dirty faces.

Jewels, especially, have a very warm place near the heart of man, and are almost a language of feeling. They are loved and feared and have strange power over human life. For some, pearls bring tears, opals are worst of all and diamonds are best.

90. F., thinks she could not get along without her birth stone, an opal, but would not wear one unless it had been her birth stone.

91. F., has always felt that opals were bad luck and that pearls bring tears. She would not wear either.

92. F., wears a moonstone for luck. She has worn it for eight years and feels she has a friend near.

93. F., when she wore pearls felt blue. Something unpleasant happened.

94. F., made a collection of pretty stones because they seemed so like gems. She wears a lucky pin and carries lucky bones.

Single coins of silver and especially gold are often made fetiches of by adults.

95. F., knows a distinguished attorney who has for years carried a penny given him by an old lady, who assured him that he would not lose any cases.

96. F., carries a lucky penny.

Often one charm has not virtue enough, and as many kinds of lucky articles as possible are worn.

97. F., carries a rabbit's foot for good luck, has a four-leaved clover in her watch, also she carries a lucky penny. She cried when she lost her four-leafed clover.

§ 7. Fetiches of Association.

One form of fetichism that is extremely common is the souvenir craze. It takes every possible phase from the Colonial Dame who prides herself on her collection of teapots, to the college student that decorates his room with things "swiped" on many a midnight lark. This collecting instinct is due to the psychological law of association in which the familiar object serves as a stimulus to set off the original mental state connected with it. This, in the savage mind, amounts to the law that whatever suggests a thing *is* that thing. This is the psychological basis of the "make believe" plays of children.

98. F. I have often strung buttons together and had a name for each button. I have made a large collection of paper dolls which I do not remember having played with, but had them represent several of my companions.

99. F., asked each friend to give her a bow of ribbon with his name attached. These were placed in a prominent place and a certain degree of reverence was shown them for they were considered as photographs.

100. M., 21. In a box of treasures, when a boy, I kept a blue pill box, a bit of cord, a funny nail, some half-burned colored candles, a wax match, colored glass and paper. Other things were hoarded for many foolish reasons and some without any reason at all.

101. F., 18. I long kept two mementoes, a faded flower from the place where I last saw my little kitten, and the old rag I wrapped around my sick baby chicken.

102. M., 18. When about five, I had a passion for mementoes and would bring a stone from every place I went, to remember it by. I kept my relics to bring up past experiences.

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103. F., 29. I lately came across a box of things that were very precious to me as a child. It contained a blue cuff button, two jacks, a glass stopper, an ivory umbrella handle, an empty perfume bottle, shells, a bit of coral, funny letters, many bits of cloth and ribbons, tissue paper, etc. All of my girl friends had such things and we traded much, but allowed no one to touch our treasures.

104. F., 23. Thirteen years ago we went from the East to Chicago. Just as we were leaving, my bosom friend Nellie and I were walking arm and arm, we each picked up a stone and gave the other. Later in Chicago, I would talk to my stone as if it were Nellie. Each of us still cherish our stones and I feel if anything happened to it, something would be wrong with her.

105. F., 16. My uncle I never saw, for he died in the war; but I took great pleasure in and felt great awe over the things kept sacred in his trunk; a spoon, knife, a note-book, a pack of cards, an arrow head, etc.

Nos. 98 to 105 illustrate what has just been said of the law of association as recalling past experiences. This is paralleled in the scalps which the American Indian proudly exhibits and in the thousand and one incidents of savage life where abstraction is impossible and every thought clings to concrete forms.

Nos. 98, 99, 101, 104 and 105 bring out the fact that one cannot love in the abstract. There must be something to keep memory fresh and the heart tender. It is natural to keep the things that remind one of dear friends removed from earthly life and where it does not occur we feel something is lacking in one's nature. The tenderest, best emotions of life are wrapped up in a faded flower or some seemingly meaningless and worthless object. This is nowhere better seen than in love fetiches. Everything that the mistress has worn or touched, be it ever so humble, is sacred to the ardent lover; the perfume she prefers recalls her with overwhelming emotions; souvenirs collected on strolls together are dearer than gold; the ring that acknowledges their engagement is sacred above all else to the maiden's heart from its associations and, perhaps, from a superstitious regard of it. Photographs well show how a savage can look at an image. The lover kisses the photograph and speaks to it as tenderly as if it were the original. Nice distinctions as to appearance and reality never trouble him, unless with the consciousness that the photograph is not as satisfactory as the original.

Others smile at the lovers but "all the world loves a lover," and never is man so close to the past history of the race as when he is a lover.

Articles of food are often regarded mystically. Friends keep half of a cracker each, curious candies, fruit, bits of wedding-cake.

§ 8. Conclusion.

While the arrangement of material has been arbitrary, the

fact nevertheless remains that in the child can be found all the elements that, united, made man a religious animal.

As a suggestion in race pedagogy it is well to remember that two milleniums of Christianity has not removed but only modified the old savage traits. Intellectually we have risen above the savage, but in the emotional nature we are about the same as ever. We have but to scratch the skin of the American soldier to find the Tartar, and we have only to go among the most refined American homes and schools to find the old race superstitions surviving in about their pristine strength. In view of this it is folly to expect a South Sea Islander to become a Christian and lay aside his superstitions in one day, nor is it anything against the missionaries that travellers report the savages going to church in the morning and to the old heathen rites in the afternoon. A man cannot make himself over in one day, much less a race.

This would be a dismal world indeed, if every one were confined to cold facts in speech. This survival of animistic ideas in children is proof of its necessity in the development of the race and individual.

Cases like those reported by Dr. Gould (10) often cause parents no little alarm but the child will certainly come out safely if left to himself.

Thanks are due to Dr. Hall for suggestions and material, also to Miss Power of the Home School for collecting much of the data upon which this paper is based.

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CHUMS: A STUDY IN YOUTHFUL FRIENDSHIPS.

By F. G. Bonser, Fellow in Psychology, University of Illinois.

This study was undertaken with a view to an analysis of the intimate friendships of childhood and youth with reference to their cause, their influence upon individual development and their place in the evolution of the social consciousness. To doubt that the constant companionship of two individuals exerts a profound influence upon the character of each, is to deny one of the most potent factors in the development of man as a member of society. The pertinent observation of Falstaff applies to childhood and youth even more forcibly than to adults. "It is certain that either wise bearing or ignorant courage is caught as men take diseases, one of another; therefore let men take heed of their company."[1]

That the material serving as the basis for this study might be spontaneous and uncolored by critical reflections, I have collected expressions from pupils of the high school grades, pupils who are now full of the experiences in which we are most interested. Instead of the formal questionnaire given directly to the pupil, an outline for a theme was given to the teacher, the theme to be set as a regular lesson in composition. Last February this outline was sent to a number of teachers of English in Illinois high schools under whose instruction were nearly 4,000 pupils. Replies were received giving results from 2,035 pupils: 756 boys and 1,279 girls. From the fact that the pupil knew nothing of the purpose of the theme, the data received have a spontaneity and value which are seldom attained by the questionnaire method.

The outline for the theme covered the following points: the age at which the intimate friendship began; the relative ages of pupil and chum; what attracted the pupil to his chum; how often they were together and how the time together was spent; whether they ever quarrelled; whether likes and dispositions were the same or opposite; whether they ever planned to leave home together and start out for themselves; whether they ever kept secrets from their chums; whether parents ever objected to the friendship and if so, why; and any other points of interest regarding the relations with chums.

[1] Henry IV., Part II., Act V., Scene I.

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At the time the theme was handed in the pupil was asked to include with it a statement of present age, number of children in the family, number of brothers, number of sisters, and if either parent is dead, age at the time of death.

I here take the opportunity to express my appreciation of the kindness of those instructors in the Illinois high schools who so generously complied with the request for the material by which this study was made possible; also to thank Dr. Edwin Grant Dexter, Professor of Education in the University of Illinois, and Dr. Stephen S. Colvin, Assistant Professor of Psychology in the University of Illinois, for many valuable suggestions in the development of the study.

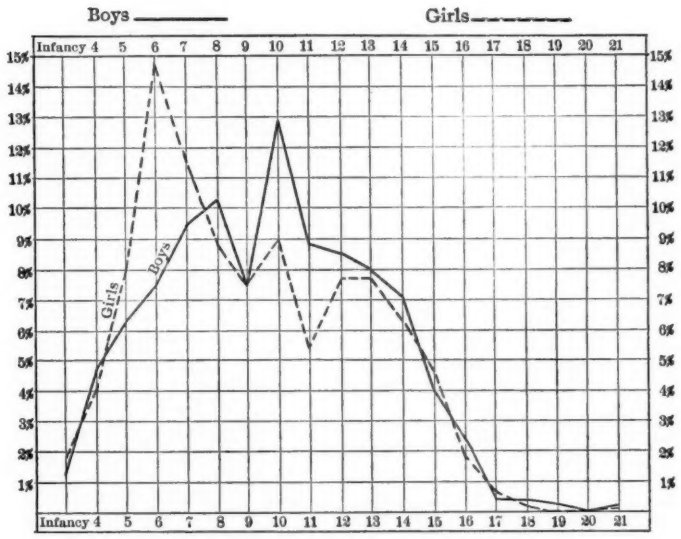
The Age of Pupils Reporting.

The ages of the pupils reporting, while varying from 12 to 22 years, were 14 in 14 per cent. of the returns, 15 in 25 per cent., 16 in 25 per cent. and 17 in 20 per cent. The percentages for boys are confined quite largely to the ages of 15, 16 and 17 years, being respectively 22.8 per cent., 22 per cent. and 21 per cent. for these ages. But the larger number of girls are 15 and 16 years, the percentage being respectively 26.9 per cent. and 27.5 per cent., while the percentage is but 19.5 for 17 years. These percentages for 16 and 17 years indicate that nearly one-half the pupils reporting are of the later years of the high school course.

When Chumming Begins.

The ages at which the intimate friendships considered in this study begin, extend from infancy to 21 years. The percentages for these various ages are shown graphically in the accompanying figure. At the extremities of these curves the percentages are low and are almost parallel. But at five years the curve for girls begins to rise and reaches its maximum at 6 in 15 per cent. of the whole number. Then it falls rapidly to 9, when at 10 there is another rise, at 11 the curve falls, but rises again at 12 and remaining the same at 13, falls rapidly to less than 1 per cent. from 17 years to 21. For boys, the curve rises gradually until at 8 years it reaches 10.25 per cent., then falls at 9 to 7.5 per cent. and rises to its culmination point at 10 years in almost 13 per cent. For 11, 12 and 13 years, the percentages lie between 8 and 9, then the fall is approximately parallel with the curve for girls.

These percentages indicate that chumming begins rather earlier with girls than with boys. The age at which the formation of intimate friendships is most common is 6 years for girls and 10 years for boys. For both there is a diminution at 9 years and an increase at 10. An explanation for these facts will



be considered later when we come to discuss the activities and occupations of the pupils during these early years.

The Relative Ages of Chums.

26.7 per cent. of the boys and 25.9 per cent. of the girls report the ages of their chums the same as their own. Where differences are reported they exceed 2 years in less than 2 per cent. for boys and 1 per cent. for girls. The extreme difference for boys was 7 years.

"I was 14 years old, he 21. We were both pigeon fanciers. As soon as he moved to our town we became constant friends and have remained so for four years."

"He was four years older than I. He was kind to me and protected me from bullies. We spent much time in reading together. . . . . At 18 he changed entirely. He began to pay more attention to his dress and began to go in company. He soon deserted me entirely for boys of his own age."

"I was 8 and he was five years older. He was a rough, worthless fellow. He loafed about town and often kept me out of school. We played many pranks and narrowly escaped the police. My parents objected to our friendship very much but did not succeed in breaking it up for a long time. He was sent to a reformatory soon after we quit chumming."

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If statements from boys of middle adolesence not in high school could be secured on this question, I surmise they might show a greater tendency for small boys to take up with larger. "The incorrigible often seeks the companionship of smaller and younger children over whom he domineers."[1] This is often evident in truancy. Kline says that in five Massachusetts truant schools, 55 per cent. of the inmates were helped and influenced by other boys.[2]

The differences in the ages of girl chums exceed 3 years in but 3 cases. One of these is 4 years. The others may speak for themselves.

"I was 12 when we began chumming and she was 17. We each had a horse and spent much time together riding. A lasting friendship sprang up between us."

"I usually desire solitude. At 13 I was attracted by the jolly disposition of a teacher eight years older than I who took a great interest in me. She has been the only chum I have ever had."

The results obtained by E. G. Lancaster in his study, "The Psychology and Pedagogy of Adolescence"[3] are quite different. Of 369 statements as to the relative ages of companions sought during adolescence, 227 chose friends older than themselves, 41 younger, and 91, associates of their own age. "Seventy-five per cent. of adolescents seek the companionship of those considerably younger or older than themselves." While this may be true of those in later adolescence in seeking new associates, it does not apply to the intimate friendships of early adolescence and childhood. Although approximately 75 per cent. of the 2,000 persons considered here were younger or older than their companions, the difference is not great enough to be of any significance. The fact that the persons studied by Lancaster were much older and under very different circumstances, may account for differences in results. His conclusions apply to the more advanced ages of adolescence and not to the period prior to 17 years. Or, if older associates are chosen, they are not made chums or cronies of the confidential sort.

Reasons for Attachment to Chum.

Many general replies were given showing the necessity for having a chum. A number of these are here reproduced.

Boys. "Every one needs a chum for sympathy." "How can one have a good time without a chum?" "A boy has to

[1] "The Incorrigibles," Albert H. Yoder. The Journal of Psychology and Adolescence, I, 29.

[2] Truancy as Related to the Migrating Instinct. *Ped. Sem.*, V, 402.

[3] *Ped. Sem.*, V., 86, 87.

have a confidant." "My chum cheered me up when I was sad." "Every David has his Jonathan." "We were a team and would fight for each other." "We stood together like a wall built with bricks."

Girls. "One needs a chum for sympathy." "I never enjoy myself without my chum." "A true friend is better than a distant relative." "Without a true friend life is but a wilderness."—*Bacon.* "A chum is indispensable." "I pity a girl who is an only child." "We pretended we were sisters."

Six hundred eight pupils, 188 boys and 420 girls, give as the only reason for their intimate friendship the fact that they lived near each other. Children thrown naturally together are almost sure to be mutually attracted through play interests.

The public school is the occasion for many intimate friendships, 17 per cent. of the boys and 13 per cent. of the girls stating that they were drawn to their friends through school associations. Very frequently the chum is the first acquaintance made on entering school or on going to a new school. The reports also indicate that the Sunday School and church relationships often furnish the basis for intimate and lasting friendships. Other reasons given by both boys and girls were these:

"We were cousins." "Our parents were good friends." "Each had a horse." "Mutual interest in music." (Boys, 12; girls, 20.) "Amiable disposition." "Optimism." "Opposite qualities." "Wit and humor." "Intelligence and good sense."

Boys. "Athletic superiority." "He won a fight with a larger boy." "He lost his mother and needed a friend." "Our mutual interest in electricity." "He was a born leader." "He taught me to swim." "He was good natured and generous." "He was a jolly good fellow." "He was a successful hunter." "His courage and bravery." "His high moral character." "He took an interest in me." "We sold papers together." "He was square and unselfish." "We had the same birthday." "His father was a confectioner" (3). "We were brothers in persecution at school." "He had a rifle." "I was caught in a railroad switch and he saved my life." "His argumentative ability." "We were both pigeon fanciers." "He protected me from bullies." "We were rivals; had a fight; were punished together, and then became chums." "His odd ways."

Girls. "Her sweet temper." "Her lovable character." "We were the only girls of an age in the neighborhood" (6). "We each had bicycles." "Our gentlemen friends were chums." "Our study together." ', We were both strangers in a new neighborhood." "Her fidelity." "Her red apron

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and white hat." "Her little red bonnet." "Her light hair." "Her sincerity and unselfishness." "We were both lonely." "Her shyness." "Neither of us had a sister." "We both loved Dickens." "She was quiet, I wild." "Her love of mystery and fairy tales." "Her brown eyes and hair." "We were punished together at school." "We both study art." "Neither of us liked dolls." "She has yellow hair, mine is brown." "Her pretty dress." "She is a brunette, I am a blonde." "She taught me to skate." "Our mutual love of reading." "She was a good conversationalist."

A number of these will be noted to be the occasion of the friendship rather than any source of attractiveness in the chum. Neither features of personal appearance nor articles of clothing appear as sources of attraction in any of the replies from boys, but these do occasionally from girls. Perhaps we may make one exception. A girl 16 years of age, who has had a boy chum from infancy, says: "As a child he always liked me best when I was in blue."

From these summaries it would seem that chance association and momentary caprice very largely determine the selection of the chum in these early years. The elements drawing children and adolescents together into intimate friendship are a desire for sympathy, for closer companionship and for mutual confidence. In speaking of early adolescence, Dr. Hall says:[1] "Confidences are shared with those of equal age and withheld from parents, especially by boys, to an extent probably little suspected by most parents. . . . . There is now a longing for that kind of close sympathy and friendship which makes cronies and intimates." "There is a yearning to be with and for ones kind."[2] The time is ripe for the cultivation of consistent altruism and the sensibility to moral courage and heroism is at its height. It is the opportunity for building character, for the adaptation of the pupil to his place in the social group, and is one of the most critical periods in the evolution of his moral attitude.

Frequency of Association and Occupations of Chums.

Sixty per cent. of the boys and 66 per cent. of the girls state that they were together every day, or "always," or "constantly." Reports from others are scattering and often indefinite. Among the replies are these: "On Saturdays;" "at school;" "at entertainments;" "on Sundays;" "through va-

[1] "The Moral and Religious Training of Children and Adolescents," *Ped. Sem.*, V, 206.

[2] "The Social Pedagogy of Boyhood," William Byron Forbush, *Ped. Sem.*, VII, 310.

cation;" "two or three times a week;" "rarely;" "as constantly as Mary and her lamb."

The occupations of chums while together are various, but the common games and sports of childhood and early youth greatly predominate. The most numerous replies from boys are: Athletics; hunting; fishing; boating; swimming; bicycling; riding horseback; coasting and skating. In addition these replies occur: Study; playing musical instruments; conversation; working; arguing; walks to the woods; camping out; telling stories; collecting eggs; making experiments in chemistry; experimenting with electricity; studying telegraphy; playing circus; mischief; playing "hookey;" raiding orchards and melon patches. Reading is given as the chief occupation by a number, and one boy says: "We sometimes read one book a day from the library." Replies from girls are also appropriate in this connection:

"We read many books together." "We read the Elsie books, Lord Fauntleroy and many other books aloud to each other." "We read all of the fairy stories in our library to each other."

This intense desire to read has been noted by Lancaster.[1] Of 523 mature individuals, "453 (223 M., 230 F.), have had what might be called a craze for reading at some time in the adolescent period. . . . . It is the golden opportunity to cultivate the taste and inoculate against the worst forms of the reading habit. The curve of this intense desire to read begins at 8, rises to 10, and then rapidly from 11 to 14, culminates at 15, then falls rapidly, nearly reaching the base line at 18."

In the occupations of boys the constructive and commercial activities are seen in two cases:

"We made little wagons and sold them to other boys at 20 cents a piece." "We made sleds and kites to sell."

The constructive instinct is strong in almost every boy. He makes wagons, fire engines, machinery of all sorts, builds houses, railroads, traps and whatever attracts his temporary interest. In the appropriate utilization of this instinct lie the essential elements of will training. Trained muscles beget strong wills.

The frequency of such activities as "mischief," "playing hookey," and "raiding orchards and melon patches," indicates the survival of race instincts which so often make their transient appearance in the individual's rapid recapitulation of his ancestral history. This age of savagery appears in the early youth of many who become men of moral worth and integrity. A study based upon data collected from 43 men of this type[2]

[1] *Ibid.*, pp. 102, 103.

[2] "Some Criminal Tendencies of Boyhood," Edgar James Swift, *Ped. Sem.*, VIII, 65-91.

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reveals the fact that larks and adventures, truancy, petty thievery, lying to escape punishment, and other criminal tendencies of various kinds are very common among boys of the best training and environment. Robbing orchards and stealing melons are "almost universal with those having opportunity." "Race instincts are amenable to primitive custom, and not to the laws of civilization."

The activities of girls are markedly different from those of boys, 26 per cent. of those whose chumming began before they were 10 years old give playing with dolls as their chief occupation in their earlier years. "Playing house" also occupies a large portion of the time of girl chums until ten or twelve years of age. Other interests and occupations given are as follows: Playing games; riding bicycles; riding ponies; studying; conversation; going to matinees; singing; playing upon the piano; out of door sports, as skating, coasting, boating, croquet, golf; fancy work; sewing; making candy; sketching; gossipping; dressing up like grown folks. Activities showing the wealth of childish imagination and the hold of the "land of make believe" are shown in the following replies:

"We played theater in our play house." "We played theater and used our garret for an opera house." "We told stories of ghosts, burglars and gypsies." "We imagined ourselves princesses and queens." "We planned to be old maids and always live together." "We planned how we would live in a bower of roses in a secret place." "We spoke of secrets by mysterious names." "We had several pet chickens which we dressed up like dolls." "We held a doll's funeral in our attic." "Our cat died; we had a funeral, and no one was allowed to attend who would not cry." "We had a big funeral when my cat died." "We made plans to capture Santa Claus, but went to sleep before he came." "We spent much time building air castles."

The interest of girls in fairy lore is indicated by these statements:

"We read all the fairy stories in our library." "We spent many hours in telling fairy stories." "We often compared our joys and sorrows with those of children in fairy tales." "We often wrote fairy stories." "My chum wrote fairy tales and I tried to write poetry."

Fairy stories play a much larger part in peopling the imaginary world of girls than of boys. Not content with the stories as they are read and told, the child rearranges the old stories, creates new characters and situations and builds up a subjective world peopled with the children that most please her fancy, and lives with them until new interests and activities absorb her time and attention.

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The importance of the imagination in the early life of the child entitles it to more attention than it often receives. A rich creative imagination is an essential element of genius. In robbing a child of fancy, of imagination, "You rob him of his spiritual life," says Francis W. Parker.[1] "Give to the child the full measure of pure, sweet fancy, and then in after life he will see heaven and God and the angels."

Keeping house and playing with dolls, being "grown up folks," is the occupation which claims a large part of the attention of younger girls. The tendency to imitation is strong in both sexes, but it takes more persistent form in girls in their living in miniature the lives of their mothers and grown up sisters. As soon as the boy attains the freedom of forest, field and stream he ceases to live in the occupation of his father and becomes a roaming savage, hunting, fishing and wandering about in quest of adventure. I believe that in this difference lies the explanation for the formation of intimate friendships earlier among girls than among boys. The activities of the boy do not require the intimate relationship necessary for "keeping house" or taking care of the doll family. The boy hunts or fishes or chases cats with any other boy who may be convenient. If he plays games they are usually collective games—two boys are seldom seen alone playing marbles or ball. But the girl becomes the head of her little family of dolls, visits her neighbor who has a like family, and a mutual companionship is formed in the occupation of housekeeping which often develops into a life-long friendship.

At about 10 years of age the boy's interests broaden; he begins to carry his excursions farther; the crowd cannot go on these longer tours, so he needs a chum. Duties, both of home and of school begin to weigh more heavily upon him, and he wants some one with whom to sympathize. Circumstances of environment throw him into the companionship of some one of his own age, and they become inseparable chums, sharing each other's trials and triumphs in play, school and home.

Reference to the figure will show that the curve for the age of formation of chumships falls for both boys and girls at 9 years. The anatomical and physiological changes at this period may account for the mental attitude which causes this drop in the curve. The heart increases rapidly in size at this period and the blood pressure rises very markedly. "The change of blood pressure is therefore one of the first signs of approaching puberty."[2] Accompanying these physical changes is a

[1] "The Child," Report of National Educational Association, 1889, 480.

[2] Lancaster: *ibid.*, 68.

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mental instability, a fickleness and restlessness which influence his whole attitude and it is not surprising that friendships of this period are unstable and transitory.

The drop in the curve for girls at 11 years is very marked also, here reaching the lowest point between 5 and 14 years. Mental fickleness and instability are greater in girls than in boys no less than are the physical changes of early adolescence. The curve indicates clearly this want of constancy and stability at eleven years of age, the age when the turbulence of puberty begins its regeneration of the whole life, physical and mental.

The Quarrels of Chums.

Fifty-one and five-tenths per cent. of the boys and 53.5 per cent. of the girls reporting state that they have quarrelled with their chums. Among these replies "rarely," "seldom," and "once" occur frequently. Replies from girls include a number giving "spats" but not real quarrels. Several state that they quarrelled when younger, but have not done so for several years. A girl of 17 writes: "We never really quarrelled, but we sometimes played quarrel just to see how it would seem." "We had a bitter quarrel because she received the blue ribbon first in a class at school," comes from a girl of 15, illustrating one phase of the perniciousness of the prize system in the school.

A boy of 17 reports a method of settling disputes which is certainly conclusive, if not wholly satisfactory. "We spun a top having red and black stripes; if it stopped on a red line I had my way, if on a black line he had his." Fights are reported by a number of boys, but they seldom sever the friendship. There is one report in this connection worth quoting: "We had a fight in his yard; his mother came out and said, 'Stop when you get done and not until then.'" The mother who has wisdom and self-control enough to see her boy fight a worthy antagonist until they are "done" is doing him a service in the development of manly courage and self-reliance, which are the inalienable right of every individual. While he should be shown that it is contemptible to fight one of inferior powers, he should feel that it is no less cowardly not to resist a boy who bullies him or who imposes upon another younger than himself. "Rather than have your boy a coward, dear mother, the next time he is involved in a righteous quarrel, stand over him and make him fight it out. . . . ."[1]

Quarrels between chums were seldom very serious, for in but 12 cases for boys and 14 for girls did the quarrels end the friendship.

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[1] W. O. Krohn: Child Study Monthly, IV, 195, 196.

Likes and Dispositions.

Those reporting dispositions as opposite to or different from their chum's are 22.2 per cent. of the girls, and 24.4 per cent. of the boys. The remaining number reply that they were the "same" or "similar." In an attempt by J. R. Street[1] to discover the part played by temperament in determining friendships, his results were as follows: Of 189 persons, 46 were attracted by opposite temperaments; 43 by similar; 50 gave no clue; and 50 confused the matter. While no satisfactory interpretation of these data is possible, the evidence from my own study seems to indicate that temperament has little place in the formation of early friendships, environing conditions being more often responsible than temperamental affinity.

Attempts to Leave Home.

Eighty-two boys and 40 girls state that either attempts or plans to leave home were made. While this is a small proportion for girls, it is not inconsiderable for boys, being 10.5 per cent. Lancaster[2] found that of 403 adolescents, "253 (153 M., 100 F.) had a desire to leave home and strike out for themselves, or found home less attractive" at this period. Reasons given by boys for planning to leave home are in nearly all cases questions of discipline or a desire to see the world.

"We could n't do what we wanted to at home." "We were both reprimanded and decided to start out for ourselves." "We wanted to go out West and grow up with the country." "We wanted to work on the railroad and earn money for ourselves." "We packed our trunks and got ready to join an opera company."

The reasons given by girls are very much the same, although a desire to see the world is more frequent than parental discipline.

"We made all our plans to join a band of gypsies, but our parents discovered them before we got started." "We planned to go to Chicago together and work in a department store." "We wanted to join an opera company." "We had a chance to go on the stage; our parents objected and we planned to run away." "We were good singers and wanted to go with a theater troupe that was willing to take us."

The stage seems to be especially attractive to girls. A dissatisfaction with the narrow limitations which surround the child often fills him with a longing to broaden his sphere of vision. Both home life and school are in some measure responsible for this. The emotional enthusiasm, the surplus energy

[1] "A Study in Moral Education," *Ped. Sem.*, V, 15.
[2] *Ibid.*, p. 84.

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and the surviving instincts from a remote ancestry all impel the vigor of early adolescence to richer and broader life experiences. Imagination is strong and active. "The desire to leave school, together with a desire to leave home, is a true and natural impulse to adjust himself to the life which he is already living in his imagination in company with his ideals. Sympathy, not punishment, is the proper corrective."[1]

Duration of Friendship.

That the friendship between chums is real and lasting is shown by the fact that of the 756 boys and 1,179 girls reporting, but 12.4 per cent. of the former and 16.6 per cent. of the latter state that the friendship with their chums was broken. Of these 34 boys and 62 girls give as the reason the fact that they moved away from the neighborhood in which the chum lived. 12 boys and 14 girls give quarrels as the cause. Parental objection is occasionally given, more frequently by girls than boys. For the remaining number the usual statement is that "we simply drifted apart after a few years." Of 100 reporting as to whether friendships grew deeper or not at adolescence, in Lancaster's study,[2] 96 say yes and 4 no.

Parental Objections.

Replies as to reasons for parents' objection to chums are as follows:

Boys. "My chum was rough." "I neglected my work." "He got me into trouble." "My parents said we were selfish and exclusive." "He had bad morals." "His influence was bad." "He read bad books, Jesse James, Nick Carter, etc." "We ran away from home."

Girls. "We were together too much." "My chum stuttered." "She had a bad disposition." "She was coarse and vulgar." "My chum was very jealous." "She was boisterous and deceitful." "My chum was a boy, and my parents put a stop to it." "We planned to run away." "She was an 'I don't care' girl." "Because her father went into the saloon business." "She was a willful, spoiled child."

The recognition by some parents of the influence of the chum upon the character of the child is well emphasized in these replies. If one may be judged by the company in which he is found, much more may his worth be estimated by the character of his chum.

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[1] Lancaster: *Ped. Sem.*, Vol. V, p. 85.
[2] *Ibid.*, 87.

Pupils Having No Chums.

18 boys and 26 girls state that they never had chums. Their reasons are various.

Boys. "There is a club of 6 of us; I have no favorite." "I do not like the idea of being too intimate with any one." "I have always had a brother for a companion." "My father has been my chum." "Chums are for *only* children." "I prefer reading to close companionship; I treat all boys alike." "My dog has been my only constant companion." "I have too erratic a disposition to make close friends."

Girls. "I am reserved, distant and easily prejudiced; I desire older company." "I believe chums are selfish, I have no desire to be so intimate with any one." "There are no other girls of my age who live near." "I am too moody and sarcastic to be very agreeable." "I prefer reading, and like no one well enough to become so intimate." "I am a minister's daughter, and my parents object to my showing favoritism." "My sister and I are twins, and we need no one else." "I think I am too egotistical." "No one but a teacher of mine fits my ideal of a chum." "I am a recluse by nature, and do not seek companionship." "My two aunts have always been my chums." "My mother and my books are my only chums." "My disposition is not amiable, and I desire no chum." "I study very much and do not care for companions." "My disposition is too changeable to form an enduring intimacy."

In these replies are exhibited some of the conditions which mark the dangers of adolescence. Self-consciousness and self-analysis are the predominating features. In this group are the recluses, the despondents and those who find no companionship with those of their own age. "I am moody and sarcastic;" "I am an egotist;" "I am a recluse;" "I am changeable;" "I desire older company;" "I have an erratic disposition." All of these replies indicate excessive introspection and a failure to have assimilated the training in social adaptation afforded most children by their life in the public school. Careful and sympathetic guidance is necessary to such persons, for without it maturity will find some of them social misfits, of little worth to the world and of small satisfaction to themselves.

Chums of the Opposite Sex.

Six boys and 13 girls report chums of the opposite sex. Girls were chosen by boys in 5 of these cases because the girls lived near them and there were no boys in their immediate neighborhood. The other boy, at ten years old, took up with a girl chum because her father was a confectioner. Nine of the 13 girls had boy chums because they lived near them and there

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were no girls of their own age with whom to associate. Other reasons given are these:

"I was a 'tom boy' and preferred to play with boys." "I liked out of door sports; my girl friends did not." "He liked to play with dolls; I admired his long yellow curls. He used to call me his wife, and I did not object if no one heard." "All my chums were boys for I could not get along with girls at all."

Circumstances of environment account for most cases of intimate friendships between boy and girl, but a small number lie in differences in disposition. A few girls enjoy more fully the usual activities of boys, and occasionally boys are found who are more feminine than masculine in their early years. In none of the cases here considered were the ages of the children above 10 years when the companionship was formed, most of them growing up at 5 or 6 years, and two stating that they began in infancy.

Children's Clubs.

Nine boys' clubs and 8 girls' are reported. Two of the boys' associations are athletic clubs. In three cases reports describe a "shack" or "shanty" where the boys meet for reading, story telling, or warming in the winter after skating or coasting. The purposes of the other boys' clubs are not given. "Big Four" and the "Inseparables" indicate the love for striking appellations.

The purposes of the girls' clubs are given in but one instance. Eight girls formed a club in memory of a favorite companion who died at 14, and the writer says, "the club is well known for its many acts of charity." As has been shown by H. D. Sheldon,[1] philanthropic activities form a prominent feature in the organization of girls' clubs generally. The same study as fully develops the fact that boys' clubs are organized very largely for purposes of muscular activity,—athletics and out of door sports.

Rudimentary Instincts and Perversions.

A number of reports indicate the appearance of the instinct for primitive forms of life.

"We camped out for two months and lived as much like Indians as we could." "We built a hut near an old foundry and spent many evenings there." "We built a shanty out of drift wood and often went there to spend our evenings."

Criminal tendencies also appear in several cases.

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[1] "Institutional Activities of American Children," *Amer. Jour. of Psychol.*, IX, 428.

"At 15 my chum got already to hang himself, but I got to him in time to save him." "We tried Jesse James tricks, and my chum tried to rob a man; he got a box on the ear and he never tried it again." "We planned to fight a gang of hoboes, but got scared and ran." "Once we tried to whip our teacher, but we got the worst of it."

In girls the desire to annoy others shows itself.

"We used to frighten people as they passed along after dark." "We teased other girls with our secrets."

The feeling of caste, discussed by Sheldon,[1] finds its expression in a number of replies.

"We were very exclusive at school, and paid no attention to other girls." "We invented a secret code for writing notes so that no one else could understand them." "She was low bred, and I soon left her for girls of my own rank."

That our customs, our morality, have been a development, and recapitulation of race history is no less evident in the individual's early social life than it is in his physical growth. From the child's birth to the close of adolescence, its life is a struggle between race instincts and primitive customs on the one hand and the laws and precepts of contemporary civilization on the other.

Conclusions.

From the above material we may draw the following general conclusions:

At one time in its early years the child forms an intimate friendship with another which is permanent in a very large percentage of cases.

The age at which youthful friendships are formed reaches its maximum at 6 years for girls and 10 years for boys.

Conditions of environment have a larger place in determining such friendships than temperamental affinity or conscious selection.

The constant associations of chums develop the social qualities, provide for the satisfaction of transient race instincts and materially aid in the cultivation of self reliance, individuality and altruism.

Sympathizing with each other, confiding in each other, coming into the closest touch with each other's inmost nature, chums exert a profound influence upon the whole life and character of each other.

The incomprehensible longings and emotions of early adolescence intensified by the mutual confidence of chums, often seek their outlet through avenues of perverse and criminal ten-

[1] *Ibid.*, p. 435.

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dencies. It is the time when the tenderest care from the home, the deepest interest from the church and the most considerate attention from the school must be thrown about the rapidly unfolding life until the stress and storm of new-born feelings give place to the calm, deliberate stability of an undwarfed maturity.

AN EDUCATIONAL OBJECT LESSON.

By SANFORD BELL, Fellow in Clark University.

The writer recently had the pleasure of spending two days in investigating the work which Principal Raymond Riordon is doing in connection with the Greenleaf Public School in the city of Washington, D. C. The following notes are a brief expression of the impressions resulting from this investigation.

The school is one of the regular ward schools in the poorest section of the city; it comprises the first six grades and follows the same course of study as the other schools in the city's system. If it did merely this these notes would be uncalled for. But the genius of a very unusual young man has taken hold of this school and is using it to correlate all of the educational influences in the community. He has succeeded in more intimately articulating the home and school than I have ever seen done elsewhere. He has more helpfully projected the school into the community and has brought more of the community into the school than I have known any one else to have done under similar conditions,—that is, the conditions that obtain in the usual public schools. He has not waited for the ideal conditions furnished by the best of buildings, the best of equipment, the best of teachers,—if those are the ideal. On the other hand he has taken hold of the conditions as he found them in a tenement district and is demonstrating what the public school can do in bettering the conditions of a community and giving its people, both children and adults, a more masterful grasp upon real life values. As a very vital, helpful influence in the southwestern part of Washington City, the Greenleaf Public School is significant. As an object lesson to educators it is more significant.

The spirit of this school as shown by the relations of pupils to teacher, of pupils to one another; as shown by the happiness, good cheer, content, by habits of industry, politeness, self-helpfulness, mutual helpfulness, self-sacrifice, etc., is not very different from the spirit of the other schools which I visited in the same city. It was a revelation to me as well as a matter of very unusual pleasure to see everywhere I went, the freedom from restraint, the high degree of naturalness among both pupils and teachers; the self-direction and the unabused liberties of the pupils and the absence of the chronic care-worn expression from the faces of the

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teachers. It seemed to me that the relations between teacher and pupil regarding the matter of management were as nearly ideal as are possible with our present system of school organization. They have as nearly an autonomous government as seems to me possible among children, without the two bad effects, first, of its being a farce where the teacher is after all the real ruler and second, so affecting the children that they think they do not need the advice of their elders. It was this fact about the Washington schools that so deeply impressed a distinguished English educator who recently inspected them. It is a matter of years of growth and is perhaps due to the influence of no one individual, but I felt that I was not far from its source when I visited the City Normal School that furnishes about fifty teachers each year for the city's corps, and in which the spirit and influence of Mrs. Ida Gilbert Myers, formerly its principal for years, is still so wholesomely and powerfully felt. Mr. Riordon is a product of the city schools and received his professional training in this Normal School.

One of the first things to attract my attention at the Greenleaf School was the school garden. It skirts the fence along three sides of the school yard, is 400 feet long and five feet wide. In it have been planted corn, peas, beans, cucumbers, muskmelons, radishes, lettuce, spinach, turnips, parsnips and such flowers as sweet peas, geraniums, nasturtiums, etc. Two years ago when Mr. Riordon came to this building this strip now used as a garden was packed gravel. The boys dug this up and wheeled it away in wheelbarrows and in its stead wheeled in good rich loam. The seeds which were planted were obtained from the U. S. Department of Agriculture. The entire work of preparing the soil, planting the seeds and tending the plants is done by the children. Home gardens are encouraged for which seeds are supplied to the children. Last year three-fourths of Mr. Riordon's pupils had home gardens. I visited among the children freely while the principal was busy at other things and heard their reports about their home gardens in which both the children and their parents are thoroughly interested. Some who have no yard or garden to cultivate have window gardens. The significance of all of this is largely lost if we do not keep in mind the kind of neighborhood in which this school is situated. Last spring each child had its separate ground plat and supply of seeds. But each plat was necessarily so small that although each child had a variety of different products, he had a very limited quantity of each. This year the ownership is to be in common until harvest time, when an equable division of the beds is to be made before harvesting. The children are raising these products for their home tables or for their luncheons at school. There is no marked boundary between the playground

and the garden and yet I saw no foot-print upon the beds nor a bruised plant. I saw a ball roll over between two rows of beans; the boy who went after it knelt down and carefully reached over and got it. I was told that no teacher had ever directed any pupil to keep off the garden. The fence that keeps them off is in the children. Two small maple trees in the yard were being injured on account of the ground about their roots being packed down during play. The soil for a radius of about three feet was dug up by the children, fertilized and planted with vegetables. The trees have not suffered since.

The playground is full of good suggestions. It occupies two courts about 60 feet square back of the school building. Formerly it was paved with brick in some places and covered with gravel in others and was without shade or equipment of any kind. Now, the girl's court is shaded by a large tent-awning and is provided with a chute, three see-saws, two large double lawn swings, benches, etc., and a large sand pile. Two of the larger girls act as monitors to see that no one gets in the way of the chute. The boys' court is supplied with a combination gymnasium outfit comprising sliding bars, parallel bars, horizontal bar, swing, trick rings, swinging poles, climbing posts and sand pile. This is covered by a suspended awning capable of being adjusted so as to shade the boys' court at any time in the day. Every square foot of space is made to count for the most, either in garden or playground. The school board has not furnished any of these supplies. They belong to Mr. Riordon and the children. I asked him this question regarding the playground furnishings: "What is the best thing about it all?" His prompt answer was, "It makes them all happy, and solves the problem of discipline on the playground. If any one should become fractious, the privileges of the playground would be taken away from him, but that restriction has never had to be enforced." He further added that it kept the children off the street before and after school hours and upon Saturdays. The playground is also open to parents who, at stated times, out of school hours come with their children and enjoy their play and a social hour or two together. The teachers are present upon such occasions and give and receive information that helps to bind home and school together in mutual helpfulness. There is nothing awkward about these meetings. Mr. Riordon is so thoroughly identified with his people that they are not ashamed to come in their working clothes if they cannot come otherwise. Froebel emphasized the fact that we must live with our children. This young man not only lives with his children but lives with their parents, and through his daily visits among them and their visits to the school he is doing his effective work of correlating the various educational influences

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of the community in which he teaches. He does not believe that a splendid school building erected and equipped at the public expense for the legitimate purpose of the education of the community, should reach but a small per cent. of that community, and besides be closed all but six hours a day, five days in the week and forty weeks in the year. The public has a right to the legitimate use at all times of such a building, and it is the teacher's duty to make it count at all times for the most in the bettering of the conditions of a community.

A newspaper edited and published each month by the pupils contains much information that is of great value in effecting the sympathetic and intelligent co-operation between the home and the school. A savings bank, which pays six per cent. interest on the money deposited in it, is officered and managed by the children. The following quotation is taken from "The Greenleaf,"—the monthly newspaper just referred to: "Deposit slips are made out as in regular banking institutions and handed with the money and depositor's book to the receiving teller, who makes entry of the amount in the small book. In the afternoon, the book-keeper makes another entry of all of the deposits in a large book. Aside from teaching how to save and not to waste, the bank has the great value of teaching the children how to attend to banking business, something which older heads do not understand. By actually banking money themselves day after day the children soon know how to go about such things as readily as they say their A, B, C."

In the manual training lines the children are taught first of all to do such things as are demanded by the actual need of their school and homes. The girls take care of the recitation rooms and halls. The boys have put electric bells in all of the rooms of the building. They have also put in telephones, doing all of the work themselves. These have furnished an opportunity for the study of some of the problems connected with the nature and uses of electricity. Mr. Riordon sees to it that various things happen to these lines from time to time that disturb their use. The children find and correct the injury. Typewriting is taught, and the children make use of their skill in making out reports, programmes, and in writing announcements, etc. The simpler aspects of bookmaking are taught, and some of the reports,—for example, the report of the vacation school, — are put out in book form, the contents having been written upon the typewriter by the children. The uses of the mimeograph and hectograph are also taught and the knowledge turned to good account. It is easily apparent that the reason why Mr. Riordon can do so much is that he has the pupils do it for him. Painting is another thing that is taught and made use of in keeping such

things as the wainscoting, door and window frames in order. Carpentry is taught very realistically. The boys have already built two sheds for storing purposes, and are now putting in a hennery which is to provide the eggs for the cooking classes. They are also soon going to begin the construction of a miniature dwelling house upon exact proportions, the masonry, carpentering, plastering, roofing, etc., all to be done by the pupils. The tools of the school are freely loaned to the patrons, who never have yet abused any privilege extended to them. The tool is always returned in good condition and put in its place. The care of the tools and putting them away in their proper places is one part of the pupil's education, and is shared by the parents. In addition to these things, shoe-cobbling, wood-carving, Venetian iron work, weaving baskets and rugs, caning chairs, Raffia platting, cooking, marketing, sewing by hand and by machine are taught. The knowledge and skill of the artisans in the community are made use of in teaching both the pupils and parents in this school.

One of the best things which Mr. Riordon has accomplished has been in connection with the Vacation Schools. The first one of these he opened four years ago after having some trouble in getting the use of one of the public school buildings. He gave his own labor free, and had one assistant who likewise received no salary. There were one hundred pupils in attendance at this first summer school. Many more applied, but could not be received on account of the limited accommodations. The school was opened in a district where the pupils had no home entertainment, no playgrounds but the street, and whose parents could not afford to take them to the country during the hot summer months, and who were too busy to look after them during the day in the city. He gave as his purpose, "to make these children happy, to increase their knowledge, improve their morals and lighten the burdens of their parent." The school was so successful and so salutary in its influences that it received the moral support of the best people in the city, and last year was helped out by an appropriation of $1,000 by Congress. The corps of assistants last year was increased to eighteen. There were 484 pupils, ranging from the kindergarten to the high school in age and development. From the beginning the instruction in these vacation schools has been less formal and more practical than during the rest of the year. Last year there was considerable academic work done. This summer nearly all of the work is to be industrial. The sessions are held during five days in each week from nine to twelve o'clock in the morning. Last year, in addition to instruction in some of the more practical phases of the common branches, there was work in typewriting, electricity, steam, draw-

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ing, painting,—both artistic and useful, basket and rug weaving, chair caning, Raffia platting, paper folding, wood carving, carpentry, gardening, sewing, cooking and marketing. During the afternoon the playgrounds were open to the children for their enjoyment. The parents were invited to come to the building for an hour each afternoon, during which they were entertained by a special programme of music, recitations, etc., followed by some instruction in practical hygiene and other things pertaining to the home. These meetings were well attended by the parents. The playgrounds were also open to them during the afternoons.

A few illustrations will show how the community at large was further brought into the school. A number of special days were held; upon one of these, District Commissioner MacFarland came to the school and explained the duties of the district commissioners and the nature of the government of the District of Columbia. Upon another day Chief Dutton explained all about the fire department, its chemical engines, system of alarms, etc. Upon the same day Major Sylvester explained the workings of the police department, and Mr. J. H. Gordon told about the functions of the District Court. Another was newspaper day, and the school was entertained and instructed by one of the city editors, a representative of the associated press, a reporter and a printer. Upon another day a druggist came and demonstrated the mixing of certain drugs and gave a talk about simple remedies. Upon Chinese day some native Chinamen furnished music upon their own kind of musical instruments. Various soloists of the city, the Y. M. C. A. Quartette and Mandolin Club, also other musical organizations have shown their willingness to co-operate in this work by donating their services.

Upon Saturdays the children were taken to the country to spend the day. All of the teachers went along to help take care of the children and to reduce the chances for accidents to a minimum. At first the expenses of transit were borne by the pupils and teachers, but last summer General George Harries very generously donated the use of his special cars, thus making these excursions to fresh air and shade and the beauties of nature, free.

Last year the board of education made Principal Riordon director of the system of night schools in the city of Washington. These schools, in most respects, are like the night schools conducted elsewhere. They meet upon three nights of each week for twenty weeks in the year. During the past year there have been such schools in nine of the public school buildings, with an enrollment of 2,149 pupils, and an average attendance of 83 per cent. of the enrollment. In addition to the instruction in

the common branches, typewriting and bookkeeping, there have been classes in cooking in six of the schools (a total of seventeen classes), carpentry in one and weaving in four. At the Greenleaf School special sessions have been held for the parents' classes from 7.00 to 10.30 o'clock upon Tuesday and Thursday nights. The work has been especially adapted to their needs. To the work given in reading, writing, composition, business arithmetic, typewriting, etc., was added work in manual training, such as weaving, carpentry, wood-carving, caning chairs. Parents who had children whom they could not leave at home were asked to bring them along, and they were taken care of and entertained by some of the older girls of the day schools.

The plans for the vacation school that is to open within the next few weeks assign three nights of each week to parents, upon which they are invited to come and inspect the work which the children shall have done during the day and to enjoy the society of the teachers, of one another and of their children. During two evenings of each week they are to receive instruction in cooking, sewing, hygiene of the home, carpentry, wood-carving, weaving, cobbling and gardening. Upon Saturdays the expert cook is going to take the mothers to the markets and help them do their buying in harmony with their means and the instruction which she has given upon food-values. The programme for the day sessions includes work in the following: gardening, carpentry and wood-carving (for both boys and girls), cooking (for both boys and girls), Venetian iron work, weaving, Raffia platting, ornamental paper folding and making artificial flowers, sewing (by hand and machine), cobbling and the kindergarten. Congress has been asked to help this work by a modest appropriation, and has not yet done so, and at the time of my visit the outlook for funds was discouraging. Nevertheless, Principal Riordon and eighteen faithful assistants have pledged themselves to carry the work on without salary or other aid if necessary.

Night schools for firemen were started in two of the engine houses last fall and sessions held one night of each week for twenty weeks. This work was also under the direction of Principal Riordon who personally taught the classes at Truck D. The plan as carried out in these schools was as follows: instruction in typewriting, exercises in word study and spelling, a thorough study each week of the most important current events, local government and the government of the United States; the formation of Congress and its work; our form of government compared with that of England; a study of business letters with punctuation, capitalization, abbreviations, quotation marks, etc; a study of business principles and simple business calculations

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and a selection each night from the works of some well known author. "The work was begun with a feeling of doubt and uncertainty,—a feeling that was entirely dispelled after the first night's work."

The work was, first of all, practical and useful. Instead of following one particular line in the arithmetic work, the time was given to a discussion of business principles, business propositions and business papers. Notes, checks and drafts were studied in detail, and the men were given blank forms to fill out, as in actual business. Sometime was given to practice in short methods of calculation, and after the principles of taxes, interest and insurance were explained, problems illustrating these principles were submitted for solution. The words for study in spelling were taken from the daily papers, the object being to familiarize them with the words in common usage. The work in business letters, capitalization, punctuation, etc., was taught principally by the use of hectograph sheets. The lessons usually concluded with a five minute selection from the writings of some standard author. The report of the year's experiment states that the results were far beyond the expectations at the beginning.

One of the most valuable and suggestive projects which Principal Riordon has undertaken is that in regard to a public playground, which he purposes to be operated in conjunction with the public schools in the southwestern part of the city. The proposed lot is just back of the Greenleaf School building a short distance, and is practically 350 feet square, with a parking 12 feet wide around the outside of the fence. This property is at present leased by the District government and is used for the storage of bricks, curbing, etc. It is ideally located for a playground to be run in connection with the school.

The playground is to be equipped with an office, a reception room, sand court, stands, bowling alley, shuffle board, sprinting track, dancing pavillion, skating court, base-ball field, tennis courts, croquet courts, quoit courts, lawn swings, see-saws, tool house, work shop, a number of shelters, toilet houses, baths and a vegetable garden. The total equipment is estimated to cost $7,028. The playground is not patterned after the playgrounds in other large cities but is planned to meet the specific needs and conditions of the people of southwestern Washington. Its purposes of elevating the morals of the community, of furnishing amusement, rest, healthful exercise, of drawing both sexes of all ages away from worse places and of furnishing a number of positive and helpful disciplines in things intimately connected with the home are too apparent to need further reference.

The systematic arrangement for the occupation of the ball

ground is planned as follows: (1) a league of eight clubs to be organized among the eight churches of the southwest, this league to play three days a week after five o'clock P. M. (2) A league of eight clubs composed of boys who work during the day and of loafers—these to play the remaining three days of each week after five o'clock P. M. To be eligible to this league, the boys must attend the free night school during its session. By this arrangement at least 160 working men and boys will be given a chance in systematic playing with its attendant discipline. (3) A third league of school boys will be organized and given the privilege of playing on four afternoons each week between three and five o'clock. The remaining two afternoons are left open for exhibition games with teams from different sections. Open dates in the schedule of the larger leagues will furnish opportunities for similar exhibition playing. To amalgamate the feeling of friendliness a picked team, composed of the best players of the larger leagues, will organize for travelling games. Pennant winning will be an objective point in all of the leagues. In the off-season basket ball and hand ball will supplant base ball.

Leagues for the systematic playing of croquet, tennis, bowling, shuffle, quoit and other games are to be organized among the working men and working women, the boys and girls employed in stores and elsewhere, pupils from all the schools, members from all the churches, and from the community in general. Work with the gymnasium outfit is planned to be open to all at all times, as is the occupation of the lawns, swings, sand courts, see-saws, one quoit court, and one croquet court. By previous arrangement the artisans whom the weather or other causes at times prevents from working will give off hand instruction to those who care to receive it, and will aid in repairing or making such things as may require skilled labor.

The general care and cleanliness of the playground will be in the hands of a constantly changing cleaning department. Incidentally, a police department will be organized mainly for the preservation of the property and the gradual elimination of such bad habits as that of swearing; the main "swearers" are to be kept longest upon the force. The men most given to swearing are put upon their honor and assigned the duty of breaking up swearing. The matter of autonomous government is to be inaugurated and maintained as far as is possible. Field days are to be held at least once a month. During the summer the grounds are to be open from six o'clock A. M. until ten-thirty P. M.; in winter from eight A. M. until ten P. M.

Mr. Riordon thinks that the success of the whole plan will depend very largely upon the one who is placed in charge of the playground. He says: "That person should be a man

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familiar with children, should be known personally by a majority of the children and their parents, should be a resident of the community and should have the respect of all who know him as well as of those who employ him. His knowledge must be practical. He should be jack-of-all-trades,—but particularly master of himself. He must be strong physically, a leader in all the athletic games; a man who has youth, health, brains and muscle in plenty, and above all when working in the interest of others, must have Collis P. Huntington's motto in mind, "Never look at the clock."

The use of this playground is intended to be limited to the people living in the southwestern part of the city. Through parents' meetings at the school, through pulpit and press, but best of all through its own workings, the extent of its purposes would soon be made known to the public. It is to serve the community at large and the Greenleaf School in particular. "Tardiness, insolence, misbehavior at school would be broken up more quickly by excluding the offender a limited period from the playground than by any other means. None would be allowed to loaf upon the grounds. We expect to have sufficient knowledge of what that boy or girl can do at home to help out, to prevent their staying at the yard when the wood has yet to be chopped, or the dishes to be washed." "When men are out of a 'job' we hope to employ them—without salary—around the grounds until work is secured, rather than let them drift to their general lounging places and forget that they are looking for work. All this, of course, must be done through the influence of the schools as institutions and the personal influence of the teachers as individuals." The teachers who work with Principal Riordon during the vacation schools visit at least six homes each day in order that they may keep in sympathetic and intelligent touch with the conditions of the people among whom they work.

The plans further provide for a general club house to be operated as a part of this public playground. There is a property near by and available that would require little remodelling in order to serve such a purpose. When remodelled it would contain a kitchen, reading room, men's parlor, women's parlor, day nursery, gymnasium, pool room, sewing room, sick room, janitor's room, toilet rooms and baths. This would be particularly useful during the winter months. Principal Riordon feels convinced that such institutions as this playground and club house can be made to serve a community much more effectively as parts of the public school than if they were managed in connection with the Associated Charities, because as parts of the school with which the people are already identified,

their meaning is better understood, and the pride and self-respect of the people are better protected.

While it is true that the public playground and the club house to be operated in connection with it are as yet unrealized, their plan is very helpfully suggestive and stimulating. And while there may be some question as to whether the actual work which Principal Riordon has done in using the school to organize the various educational influences of the community is the kind of thing that ought to be done in every community, it is nevertheless true that here is a very valuable object lesson where the real results that have been accomplished throw great light upon the answer to the question.

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LITERATURE.

England's Story, a History for Grammar and High Schools, by EVA MARCH TAPPAN, PH. D. Houghton, Mifflin and Company, Boston, 1901.

This book is what its name indicates,—a story, told in an extremely interesting way, simple and direct, written in a flowing style, and sure to interest the boy or girl just beginning English History. The book, however, is not merely a story; it is a careful exposition as well; and although the writer does not attempt to give a complete record, no important details have been omitted. The purposes of the work as outlined by Dr. Tappan in the preface are: "first, to state facts rather than opinions; second, to tell the story of England in such a wise as to make a broad, simple basis for the later study of history and literature; third, while seeking for continuity and proportion, to give special heed to the persons and events that young people would be likely to meet in their general reading." The book contains 370 pages, is neatly bound and pleasingly illustrated. The impression left after a careful reading is that it is one of the few historical texts, which has succeeded in presenting its material in a way suited to the needs of immature students, and which at the same time has neither omitted nor distorted some essential fact. STEPHEN S. COLVIN.

The Philosophy of the Christian Religion, by ANDREW M. FAIRBAIRN. The Macmillan Co., New York, 1902. pp. 583. Price, $3.50.

This distinguished author here makes a very valuable contribution to the subject. He first asks certain questions in the philosophy of nature and mind which affect belief in the supernatural reason, such as belief, philosophy of ethics, problem of evil, philosophy of history, of religions, and their founders. The theme of the second book is the person of Christ and the making of the Christian religion, in which he treats the founder as an historical person; the creation of the Christian religion up to interpretation of the person of Christ; the religion of Christ and the ideal of religion. We regard this volume as the most valuable contribution yet made by the writer, and one which every serious student of religious philosophy must ponder.

Facts and Comments, by HERBERT SPENCER. D. Appleton and Co., New York, 1902. pp. 292.

Of these thirty-nine articles, most are slight and some extremely so. The writer cannot repress the strong impression from a perusal of this book, that the venerable author has not added to his reputation, but perhaps the reverse. The diatribe against vaccination; the method of trying to interest flighty young ladies in serious topics on a ride when he does not wish to talk with them; the article on gymnastics; the pleasure the writer takes in the quaint view that rotation on a turning table in such a way as to throw the blood into the head might help mentation; and, in general, the querulousness with which many modern tendencies are regarded, the candid critic must admit savor of weakness and second childhood.

Crime in its Relations to Social Progress, by ARTHUR C. HALL. The Columbia University Press, New York, 1902. pp. 427.

This is volume 15 of the Studies in History, Economics and Public

Law edited by the Faculty of Political Science of Columbia University. It has an introduction of twelve pages by F. H. Giddings, and discusses the evolutionary function and usefulness of crime and punishment; social punishments among animals; crime among savages; savage races in Australia, America, Asia and Africa; European Aryans; Anglo-Saxons in England; England under the Normans and Plantagenets; Parliamentary government and the new feudalism; Tudor England; England under the Stuarts; modern England; has crime increased during the nineteenth century? etc.

Practical Dietetics with Special Reference to Diet in Disease, by W. GILMAN THOMPSON. D. Appleton and Co., New York, 1902. pp. 828. Price, $5.00.

Part 1 discusses different foods and their preparation; part 2, stimulants, beverages and condiments; part 3, cooking, food preparation and preservation, and the quantity of food required; part 4, foods required for special conditions; 5, digestion; 6, relations to special diseases; 7, for the sick; 8, diet in various diseases; 9, rations and dietaries. This volume is a valuable, up to date compend on a vast subject, which the world has long known to be practical and is just learning to be no less psychological.

The Education of the American Citizen, by ARTHUR T. HADLEY. Charles Scribner's Sons, New York, 1901. pp. 231.

Many college presidents have lately published volumes of various addresses, magazine articles, etc., which are among the most valuable of recent contributions to educational literature. President Hadley here has gathered various articles and addresses of his own, from 1892 down to 1901, on the demands of the twentieth century, standards of political morality, government by public opinion, the formation and control of trusts, socialism and social reform, the relations between economics and politics, economic theory and political morality, ethics as a political science, political education, the relation between higher education and the public welfare, the direction of American university development, fundamental requirements in school education, use and control of examinations, and lastly his inaugural address, entitled—Yale problems, past and present.

Duality of Voice. An Outline of Original Research, by EMIL SUTRO. G. P. Putnam's Sons, New York, 1899. pp. 224.

Six years ago the writer discovered "the voice of the esophagus; the most comprehensive and far reaching of any that has ever been made, not only in regard to the voice, but in regard to the better comprehension of our nature and our entire human existence," which will take rank in the annals of the history of the human race as second to no other discovery. The book is certainly new and interesting in a field long crowded with indefinite mediocre studies.

The Italian Renaissance in England, by LEWIS EINSTEIN. The Columbia University Press, New York, 1902. pp. 420. Price, $1.50.

The history of the Italian Renaissance in European countries outside of Italy is still but half explored. This volume deals with the scholar, the courtier, Italian merchants in England, Italian political and historical ideas in England, Italian influence in poetry, English Catholics in Rome. It is a fascinating and masterly book, and meets a long felt need.

Democracy and Social Ethics, by JANE ADDAMS. The Macmillan Co. New York, 1902. pp. 281. Price, $1.25.

In these twelve lectures, delivered at various colleges and extension

centers, the topics chiefly considered are—charitable efforts, filial relations, household adjustment, industrial amelioration, educational methods and political reform. Some of these papers have been printed in journals. The binding and type leave nothing to be desired.

The Story of the Greatest Nations from the Dawn of History to the Twentieth Century, by EDWARD S. ELLIS and CHARLES F. HORNE. Parts 1 to 12 inclusive. 25 cents each. F. R. Niglutch, New York, 1901.

This is "a comprehensive history, founded upon the leading authorities, including a complete chronology of the world, and a pronouncing vocabulary of each nation." Most of the full page illustrations are excellent and very well chosen. The text is clear and concise, and in each number about an equal number of pages is given to pictures and text.

Elementary Physical Geography, by WILLIAM M. DAVIS. Ginn and Co., Boston, 1902. pp. 401.

This work treats of the earth as a globe, the atmosphere, oceans, lands, plains, plateaus, mountains, volcanoes, rivers and valleys, deserts and glaciers, shore lines, the distribution of animals, plants and man. It is illustrated by 190 cuts and has 363 references for supplementary reading following each of the above topics, with a score or two of references to maps. It is very well indexed and contains 9 uncolored maps.

A University Text-Book of Botany, by DOUGLAS H. CAMPBELL. The Macmillan Co., New York, 1902. pp. 579. Price, $4.00.

The writer has sought to present here, in as compact a form as possible, an outline of the essentials of modern botany. It is not a laboratory manual, but primarily a work of reference, so that no laboratory exercises are given. Being prepared for students in American colleges, the illustrative material is drawn chiefly from native flora. In the taxonomic portion, a conservative attitude has been taken in view of the present unsettled conditions of nomenclature. A short bibliography of only the most important literature is added, and there are nearly five hundred cuts, besides many full page photographs.

Frames of Mind, by A. B. WALKLEY. Grant Richards, London, 1899. pp. 286.

We have here brought together in a tasteful volume the reprinted papers of one of the ablest and all sided dramatic writers on a great variety of subjects connected with the stage.

The Proceedings of the Webster Centennial. The Commemoration by Dartmouth College of the Services of Daniel Webster to the College and the State. Held upon the Occasion of the One Hundredth Anniversary of the Graduation of Mr. Webster. September 24-25, 1901. Dartmouth Press, Hanover, N. H., 1902.

The centennial of the Graduation of Daniel Webster from Dartmouth College was marked by one of the most interesting of recent academic festivities, with notable addresses on Webster's college life; the development of the college since; the Dartmouth Case; laying the corner stone of Webster Hall,—with banquet, processions and games. Many eminent men took part in the exercises, including President Tucker, Ex-Governor Black, Judge Blodgett, George Fred Williams, Edward Everett Hale, Senator George F. Hoar, Chief Justice Fuller, and others. The proceedings make a very attractive volume.

The Evolutionary Philosophy, by L. T. CHAMBERLAIN. The Baker and Taylor Co., New York. pp. 67.

This is a résumé of leading educational writers and perhaps chiefly of Professor Fiske's views. The writer's opinions seem to tally best with those of Drummond, and quaintly enough his little digest ends with the Apostle's Creed.

The Paidologist. Cheltenham, England. Vol. 4, No. 1, April, 1902.

This number contains leading articles on children's tunes, heredity, caution in child study, early drawings, and a Saturday school, with the usual number of interesting reviews.

Studies in Education, edited by Earl Barnes, Philadelphia. Vol. 2, No. 3, May 1, 1902.

This number contains the following five articles: children and animals; children's pets; studies on children's drawings; children's stories and poetry; type study on ideals.

Tarr and McMurry Geographies. Supplementary Volume, Ohio, by STELLA S. WILSON. The Macmillan Co., New York, 1902. pp. 100. Price, 30 cents.

The Elements of Greek, by FRANCIS K. BALL. The Macmillan Co., New York, 1902. pp. 283. Price, $1.00.

This is a presentation of the principles of Greek grammar in the very brief form made possible by systematic correlation and interdependence of the topics.

The Child Life Fifth Reader, by ETTA A. BLAISDELL and MARY F. BLAISDELL. The Macmillan Co., New York, 1902. pp. 272.

The selections in this excellent series of readers are carefully designed to fit the stages of natural development of the child's interests. An unusually large proportion of these extracts are from the standard authors.

A Guide to Literary Study for the Teacher, Student and General Reader, by OLAF MORGAN NORLIE. 1901. pp. 47.

The writer believes that in the classics we have the true foundations of literary study. In the second part of his pamphlet, he discusses the value and methods of such study, and in the appendix classifies poetry and gives other points worthy of consideration. He has much in view the effect of literature in forming character.

Ausgewählte Märtyreracten und andere Urkunden aus der Verfolgungszeit der christlichen Kirche, von OSCAR VON GEBHARDT. Alex. Duncker, Berlin, 1902. pp. 259.

These Acta Martyrum Selecta are gathered from various sources as on the whole in the author's judgment the most valuable, and are addressed chiefly to theological students. The text is entirely in Greek and Latin. There has evidently been the greatest care to secure accuracy in the text and great wisdom in the selections. The annotations give abundant evidence of large and ample scholarship on the part of the author.

L'Université et la Société moderne, par GUSTAVE LANSEN. A. Colin, Paris, 1902. pp. 122.

This is chiefly a treatise on secondary education, and discusses the living and classical languages, the baccalaureate, administrative and educational reforms, and their obstacles.

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Parables of Life, by HAMILTON W. MABIE. The Outlook Co., New York, 1902. pp. 103.

These are eleven papers on topics of central interest to all who are in earnest about life. They are dedicated to Lyman Abbott.

Richard Wagner's Rheingold. Edited by Richard A. von Minckurtz. Neuson & Co., New York, 1901. pp. 102.

The German text is here given with sufficient annotations and with an introductory life of Wagner and a description of the Trilogy.

A Text-Book of Applied English Grammar, by EDWIN H. LEWIS. The Macmillan Co., New York, 1902. pp. 163.

The Public School Arithmetic for Grammar Grades, by J. A. MCLELLAN and A. F. AMES. The Macmillan Co., New York, 1902. pp. 369.

The Preliminary Announcement of the Collegiate Department of Clark University, Worcester, Massachusetts, by its President, Colonel CARROLL D. WRIGHT, under date of June 4, 1902, states that instruction for the first or freshman year will begin October 1 next, and that no candidate will be received who does not sign a declaration of intention to remain during the course. Under the will of the Founder, this will be three years, and for the first year there will be no charge for tuition. The second year the tuition will be $25, and the third year $50 for each student. Students for the present will be limited to young men, and admission will be by certificate.

The regular course of instruction is comprised in eleven departments:—mathematics; English; the English language and literature; history; physics; chemistry; biology, including botany and zoölogy; modern languages; French, German and Spanish; political science and civics; economics and sociology; psychology, ethics and philosophy; Latin and Greek; the Latin and Greek languages and literature. The first year six subjects must be offered, and the announcements in the department of economics and sociology are of special interest. It is intended to provide the highest class of work.

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